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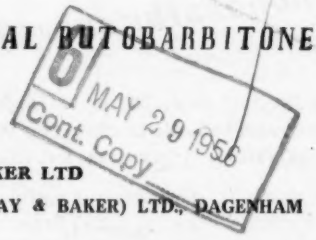

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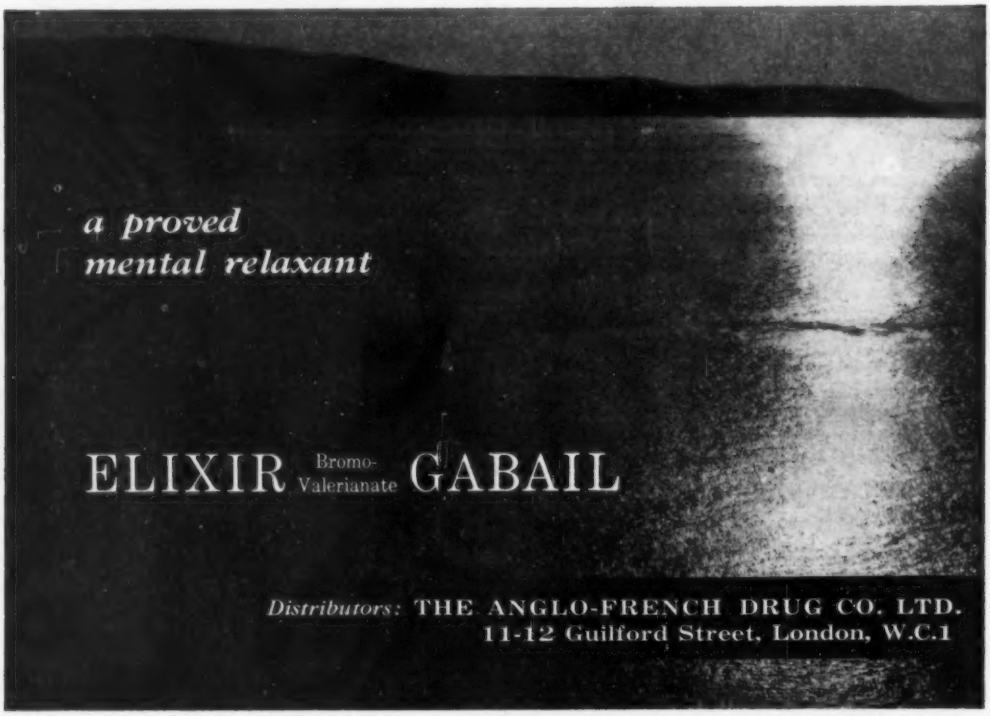

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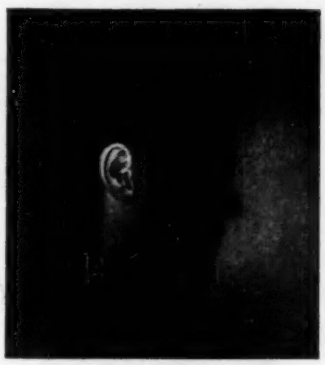

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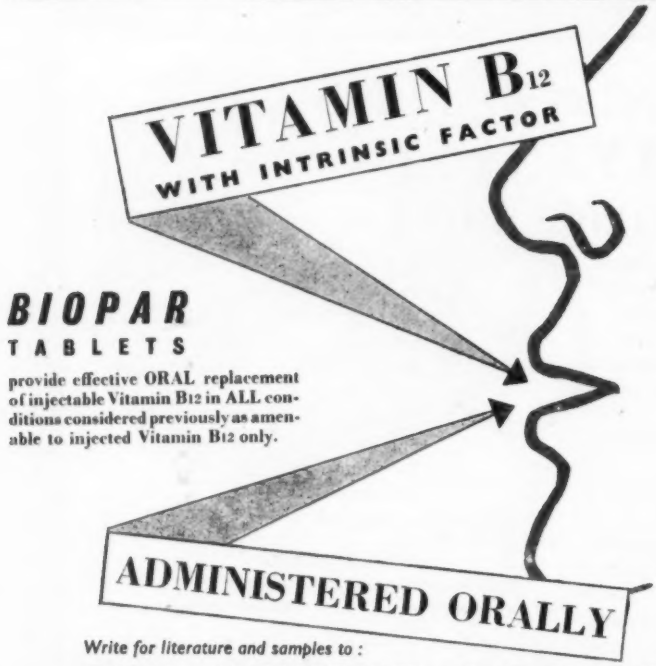

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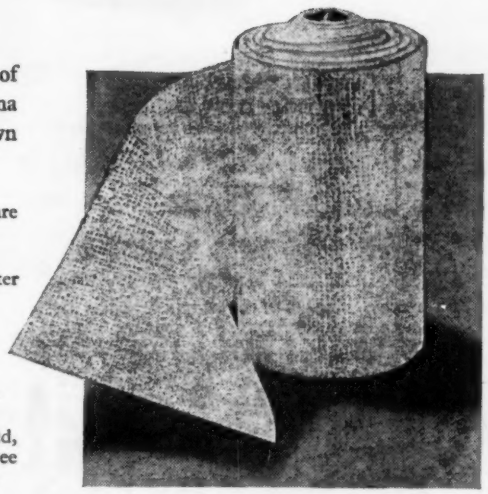

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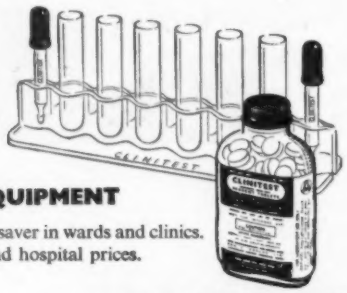

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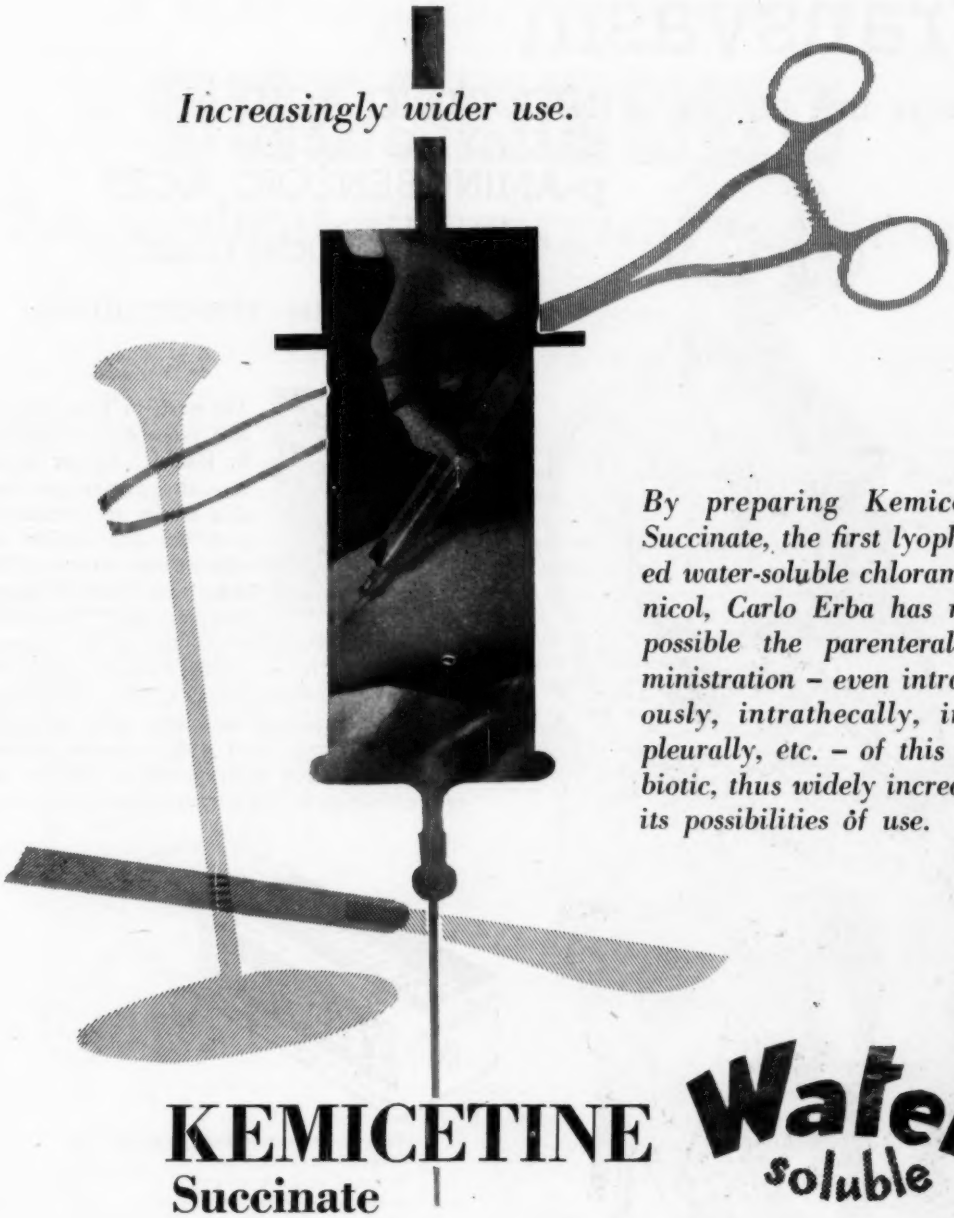

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Therapeutische Umschau VIII*, 1952, **10, 143

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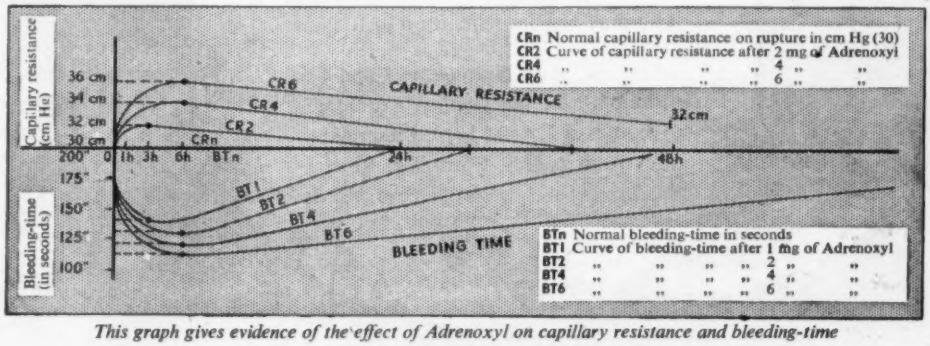

This graph gives evidence of the effect of Adrenoxyl on capillary resistance and bleeding-time

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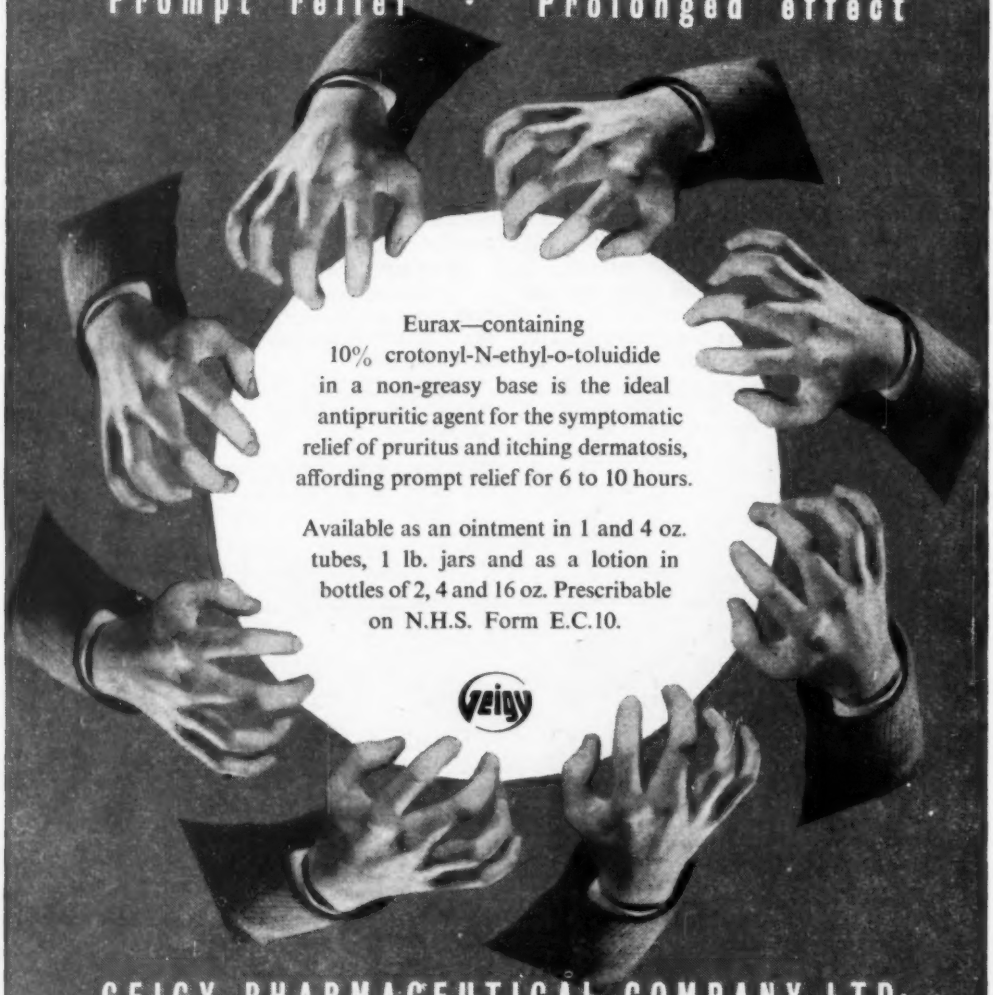

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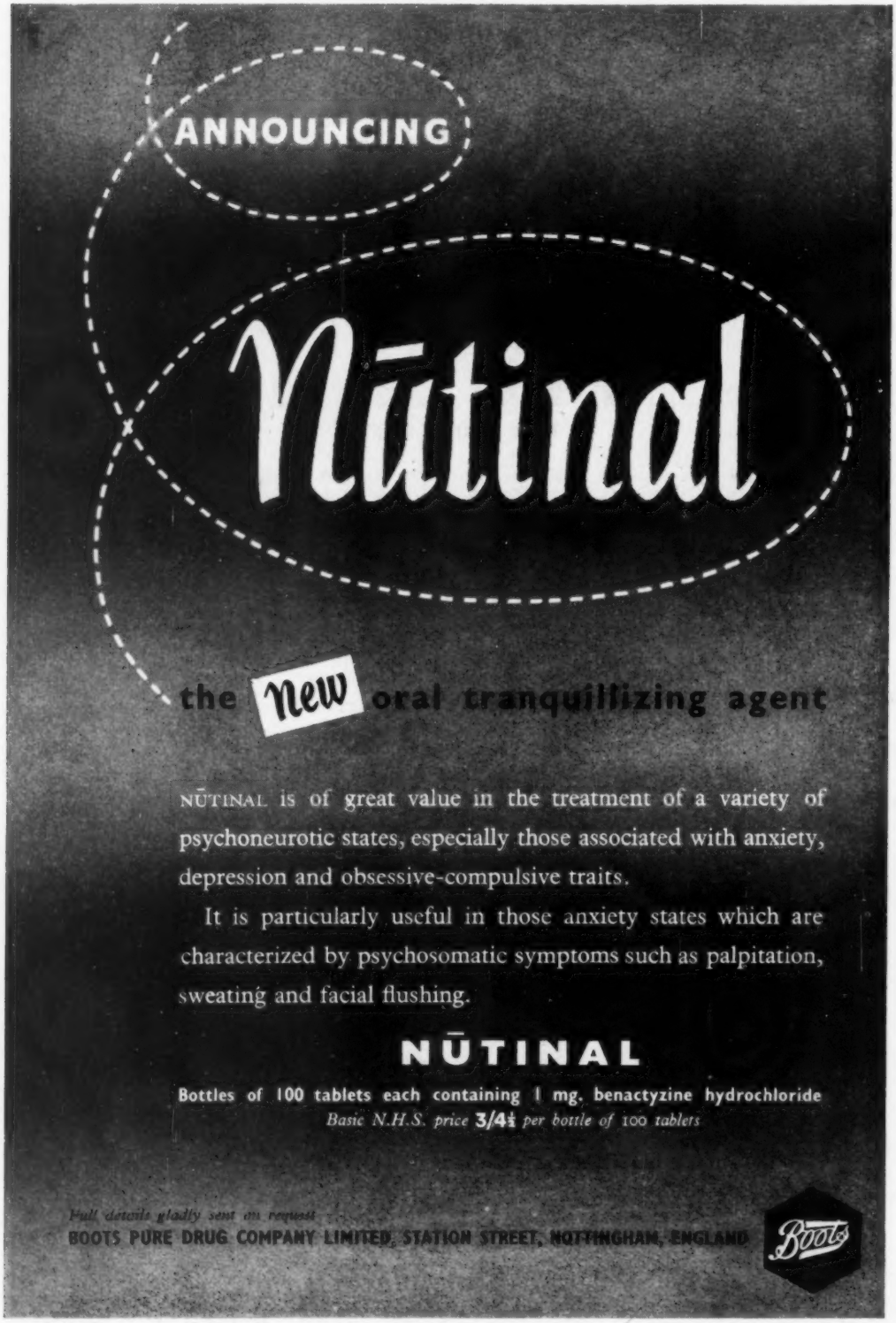
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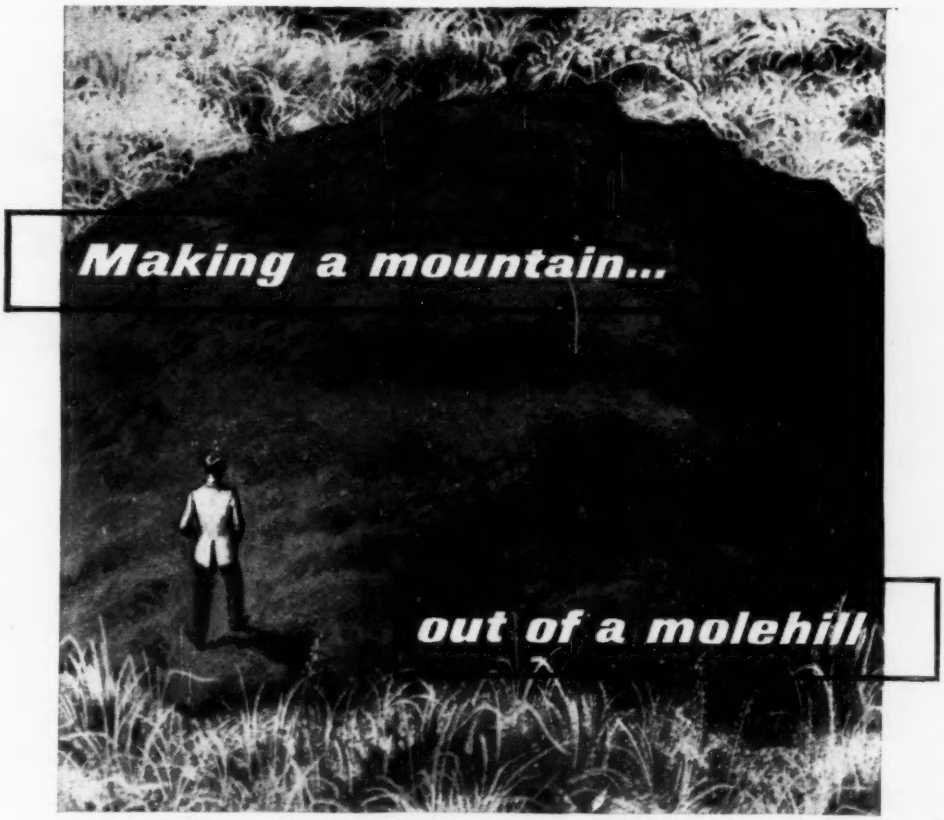

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1

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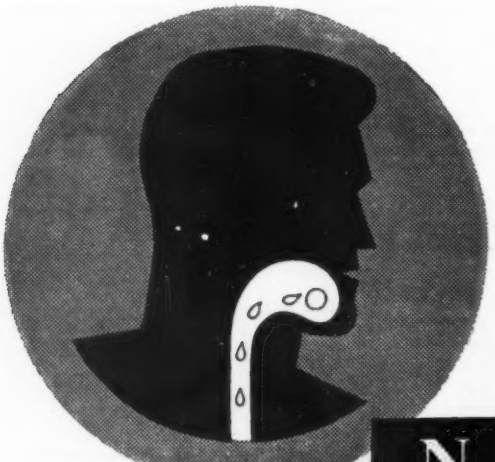
In a trial of the comparative effectiveness of a small group of drugs on a short sea journey, it was found* that hyoscine hydrobromide was more effective than either diphenhydramine or promethazine, and no less than 94% of the subjects were protected from vomiting after a single dose of 1 mgm hyoscine.

A fair summary of the available evidence shows (1) that hyoscine hydrobromide has a high degree of effectiveness in the prevention of motion sickness, (2) negligible side-effects, (3) it may be supplied without prescription, and (4) it is the most inexpensive of the group of available remedies.

Tablets of hyoscine hydrobromide are available as Kwells through every retail chemist in the country. They are advertised to the public, and sold at a price of 1/6 for ten tablets, packed in an unbreakable vial. The manufacturers of Kwells are E. Griffiths Hughes Ltd., P.O. Box 407, Manchester, who would be pleased to send a professional sample upon request.

Lancet, 1951, ii., 749



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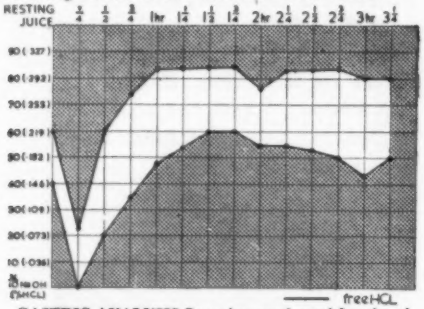

GASTRIC ANALYSIS Superimposed gruel fractional test-meal curves of five cases of duodenal ulcer

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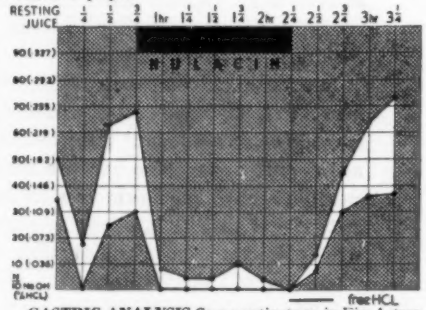
NULACIN tablets are not advertised to the public, have no B.P. equivalent, and may be prescribed on E.C.10. The dispensing pack of 25 tablets is free of Purchase Tax. (Price to pharmacists is 2/-.) Also available in tubes of 12.

NULACIN tablets are prepared from whole milk combined with dextrins and maltose, and incorporate Magnesium Trisilicate 3.5 grs.; Magnesium Oxide 2.0 grs.; Calcium Carbonate 2.0 grs.; Magnesium Carbonate 0.5 grs.; Ol Menth. Pip q.s.



GASTRIC ANALYSIS Same patients as in Fig. 1, two days later, showing the striking neutralizing effect of sucking Nulacin tablets (3 an hour). Note the return of acidity when Nulacin is discontinued

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Produces a glowing feeling of warmth
which lasts for hours
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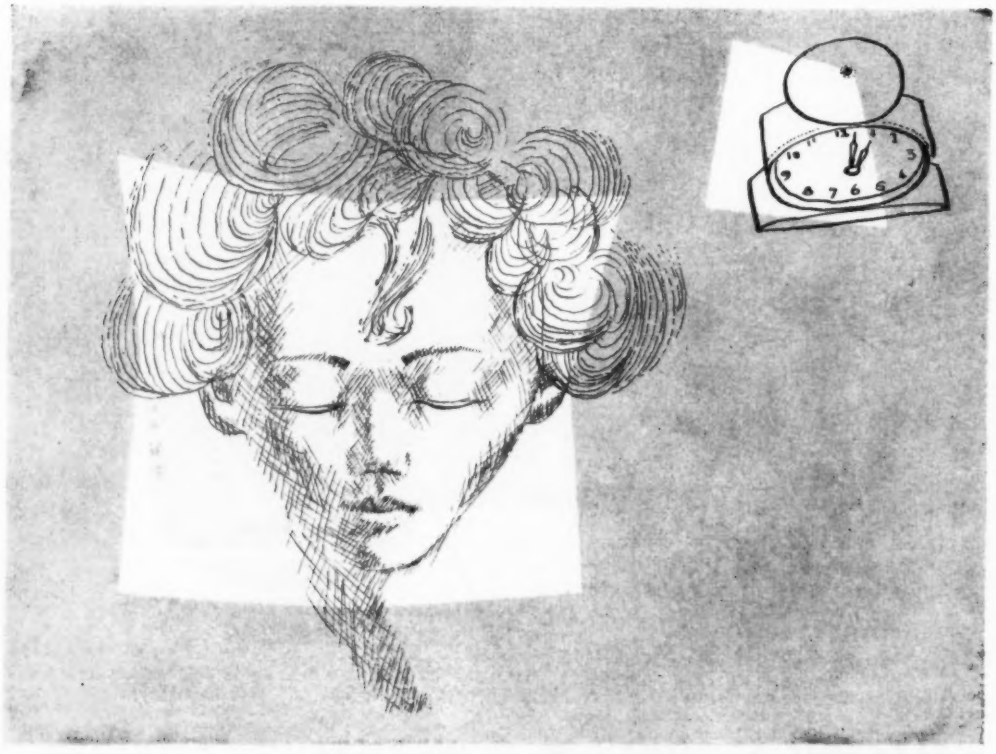

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Long recognised as a standard for the management of motion sickness, Dramamine has become accepted in the control of a variety of other clinical conditions characterised by vertigo.

Vertigo, it has been claimed†, is primarily due to a disturbance of those organs of the body that are responsible for body balance. When the posture of the head is changed, the gelatinous substance in the semi-circular canals begins to flow. This flow initiates neural impulses which are transmitted to the vestibular nuclei. From this point impulses are sent to different parts of the body to cause the symptom complex of vertigo.

Some impulses reach the eye muscles and cause nystagmus ; some reach the cerebellum and skeletal muscles and righting of the head results ; others activate the emetic centre to result in nausea, while still others reach the cerebrum making the person aware of his disturbed equilibrium. *Vertigo may be caused by a disease or abnormal stimuli of any of these tissues involved in the transmission of the vertigo impulse, including the cerebellum and the end organs.*

A possible explanation of Dramamine's action is that it depresses the overstimulated labyrinthine structure of the inner ear. Depression, therefore, takes place at the point at which these impulses, causing vertigo, nausea and similar disturbances, originate. Some investigators have suggested that Dramamine may have an additional sedative effect on the central nervous system.

Repeated clinical studies have established Dramamine as valuable in the control of the symptoms of Ménière's syndrome, radiation sickness, hypertension vertigo, the vertigo of fenestration procedures, labyrinthitis and vestibular dysfunction associated with antibiotic therapy, as well as in motion sickness.

Any of these conditions in which Dramamine is effective may be classed as " disease or abnormal stimuli "† of the tissues including the end organs (gastro-intestinal tract, eyes) and their nerve pathways to the labyrinth.

Dramamine (brand of dimenhydrinate) is supplied in tablets of 50 mg. in bottles of 12, 36, 100 and 1000 tablets and in cartons (10 strips of 10 tablets). G. D. Searle & Co., Ltd., 83, Crawford Street, London, W.1.

The site of Dramamine's action is probably in the labyrinthine structure.

* *Regd. Trade Mark*

†" Dizziness " : Vertigo and Syncope, G.P. **8**:35 (Nov.) 1953.

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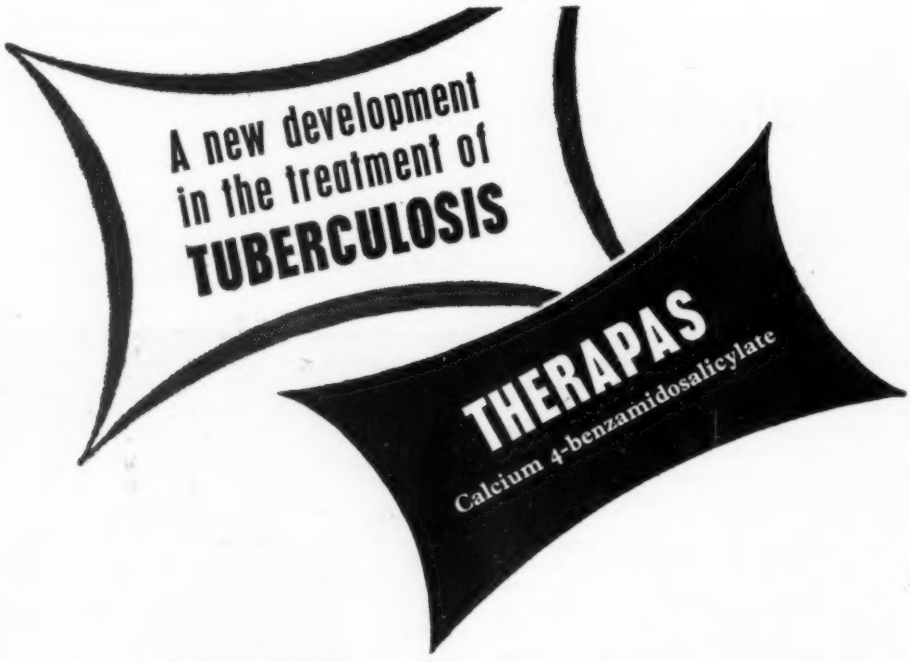

THERAPAS first synthesized in our laboratories in 1951, was introduced into tuberculosis therapy as an alternative to P.A.S. Detailed pharmacological studies have been published in this country (1), and Swiss workers have produced evidence (2) that calcium 4-benzamidosalicylate has a therapeutic action *per se*.

Therapas delays the emergence of streptomycin resistance. Its value in the treatment of genito-urinary tuberculosis is well established (3), (4), (5). Unlike P.A.S. (to which it is converted in the body) it has a slightly sweet, not unpleasant taste.

Effective though **Therapas** has been in these respects, it now appears from recent work (6), shortly to be published, that it is of still greater importance. The results indicate that:

Therapas, in combination with isoniazid or streptomycin, gives satisfactory clinical and radiological results in the treatment of pulmonary tuberculosis.

Therapas is just as effective as P.A.S. in delaying the emergence of resistance to either isoniazid or streptomycin.

Therapas can be used wherever P.A.S. is indicated, and is better tolerated.

Dosage: **Therapas** may be administered in daily doses of 14 G.
Availability: Individual packets of 3.5 G. in boxes of 100 packets.
1·0 G cachets in containers of 100 and 500.
Bulk powder in containers of 100 G and 500 G.

(1) *J. Pharmacy & Pharmacol.*, 1953, **5**, 849.

(2) *Schweiz. Med. Wschr.*, 1955, **85**, 222.

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(5) *Lancet*, 1955, **1**, 116.

(6) *Tubercle*, 1955, **36**, 209.

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In this paper the results of the treatment in 127 cases are described and the main advantages of the combination summarized thus :—

"Administration of large amounts of morphine without respiratory depression, narcosis or depression of the cough reflex ; amiphenazole apparently prevents the onset of any marked tolerance to morphine, and possesses a central nervous stimulant action of the caffeine type ; and treated cases have a bright mental outlook under otherwise hopeless conditions."

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A little goes a long way.

Most conditions are adequately controlled by the 0.5% Ef-Cortelan Lotion and, because it has superior spreading and penetrating qualities and brings hydrocortisone into more intimate contact with the tissues, the lower strength is as effective as a 1% ointment. This, and the fact that only a little of the lotion is used, offers appreciable economic advantages. Ef-Cortelan Lotion is especially suitable for extensive, weeping surfaces and for application to the scalp.

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(0.5% and 1% hydrocortisone alcohol in water-miscible base) in 20 cc. squeeze bottles.

ALSO FROM THE GLAXO CORTISONE RANGE. EF-CORTELAN SKIN OINTMENT NO. 1 (1% and 2½% hydrocortisone acetate in *non-greasy* base); EF-CORTELAN SKIN OINTMENT NO. 2 (1% and 2½% hydrocortisone acetate in *greasy* base). Both in 5 g. and 15 g. tubes; 50 g. jars.

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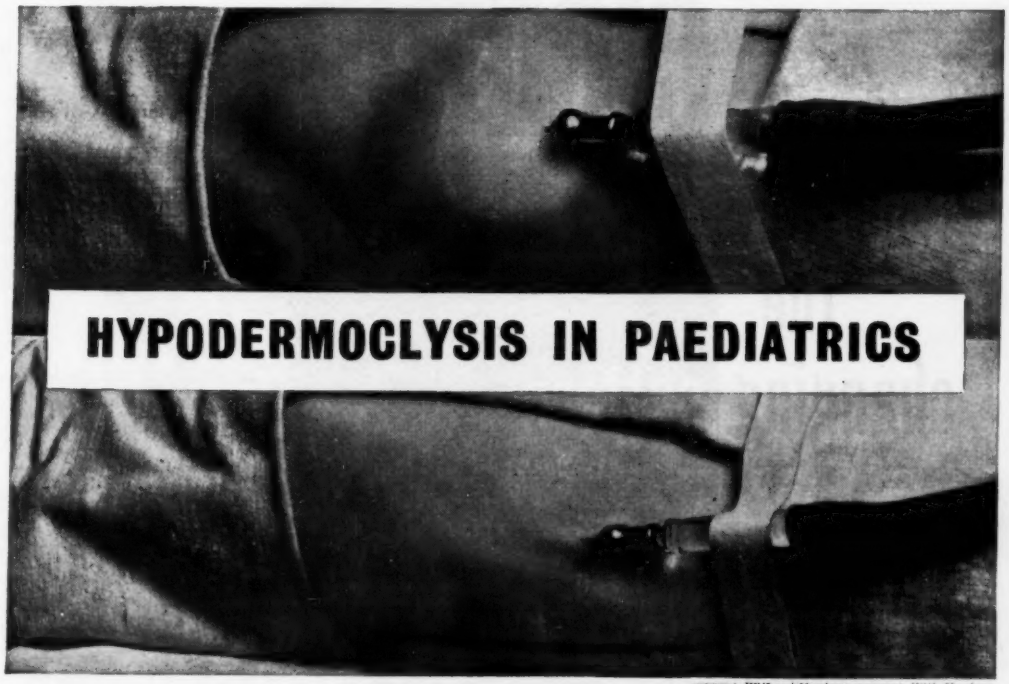

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(UPPER) *Without Hyalase* (LOWER) *With Hyalase*

INTRAVENOUS THERAPY may often be difficult owing to the inaccessibility of suitable veins or the restlessness of the child. Subcutaneous administration must be undertaken.

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	BEFORE	AFTER				
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Proportion Infected	40/183	11/172	6/170	4/158	2/149	0/161
% Infected	21·9	6·4	3·5	2·5	1·3	Nil

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REFERENCES

(1952) *Ann. Soc. belge Med. trop.*, **32**, 91.
(1952) *An. Inst. Med. trop., Lisboa*, **9**, 563.

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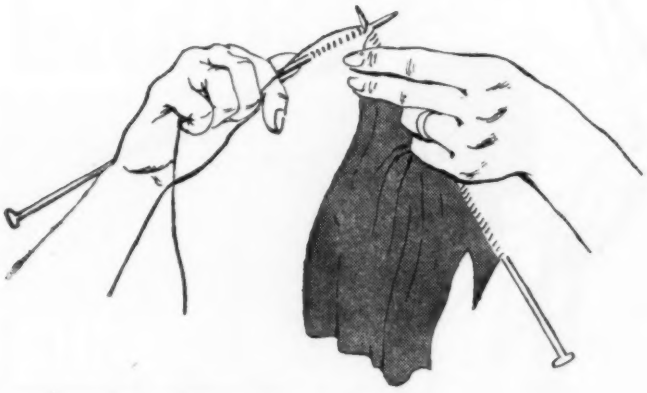

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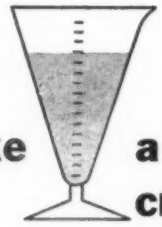

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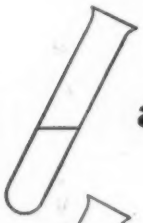

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references

1 *Z. KreislForsch.* 1954, 43, 756
2 *Angiology* 1954, 5, 314
3 *J. Pharmacy & Pharmacol.* 1952, 4, 872

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1. LANCET, 1954, 2, 942. 3. B.M.J., 1954, 2, 1256.
2. B.M.J., 1954, 2, 1257. 4. LANCET, 1954, 2, 1245.

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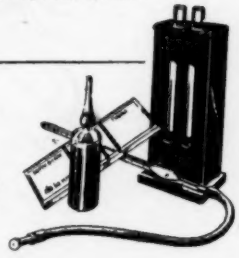

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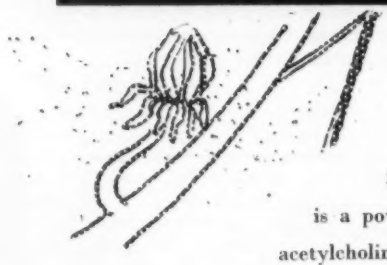

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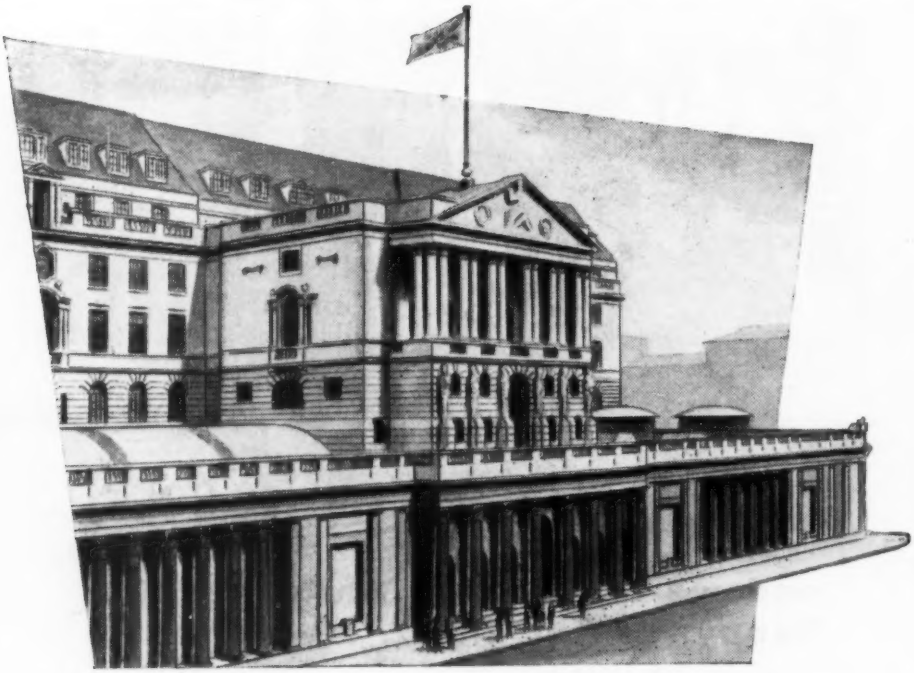

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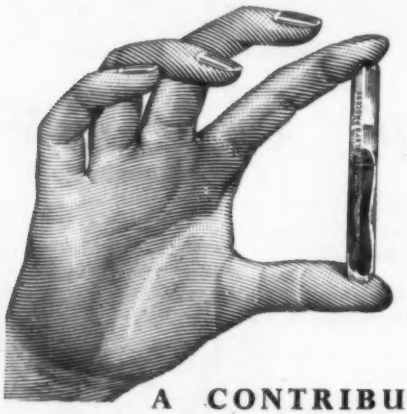

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MAN'S CHOICE OF FOOD *

JOHN YUDKIN
M.A., Ph.D., M.D. Camb., M.R.C.P., F.R.I.C.
PROFESSOR OF NUTRITION IN THE UNIVERSITY OF LONDON, AT QUEEN ELIZABETH COLLEGE

ANIMALS in their normal surroundings choose nutritionally adequate diets. Man too, in a wide variety of environments, often seems to do the same. We are usually content to assume that this demonstrates the existence of a food instinct. We can all think of apparent examples of this: the cattle that seek out salt licks containing mineral elements which their bodies need; the pregnant woman who demands fruit presumably because she would otherwise go short of vitamin C; the small child who eats plaster from the wall because he needs calcium. But when we look a little closer, we find that our interpretation of these events is very much coloured by our own emotions, by our tendency to evoke esoteric and mysterious reasons for matters which are not yet clearly understood. The pregnant woman may well demand not oranges but peaches out of season; the child may choose to eat boot-polish rather than the plaster, but it is not really likely that he now has a physiological demand for turpentine and wax rather than for calcium.

Looking still closer at the problem of food choice, we soon discover that it is determined by a great number of factors. Moreover, many of these are interrelated, so it is quite unrealistic to discuss in isolation the rôle of instinct in food selection.

We had better begin by realising that choice can be at quite different levels. At one level the choice may be between meat or vegetables, at another level between a cereal and a pulse or between meat and fish; at a third level between beef and mutton, or between rice and wheat; at a fourth level between Cheddar cheese and Cheshire cheese or between white bread and brown, or between fresh peas and canned. When we speak, therefore, of man's choice of food, we must make clear whether we are talking of a choice between, say, a meat diet and a vegetarian diet, or of a choice between ice-cream made by one firm and that made by another.

The factors which determine choice may roughly be classified into three groups: physical, social, and physiological:

Factors of availability.—Geography. Season. Economics. Other factors: food technology, fuel.
Social factors.—Religion and social custom. Social class. Education in nutrition and hygiene. Advertising. Other social factors.
Physiological factors.—Heredity. Allergy. Therapeutic diets. Acceptability. Nutritional need.

Physical Factors

Geography

There is an understandable tendency to eat foods which are at hand. Geography has largely determined the very different diets of the Western European, of the Eskimo, and of the Chinese peasant. Even relatively small distances may make great differences to the diets consumed. In different parts of Nigeria, the staple food is either millet or cassava or rice. Nearer home, the Scots eat much more cakes, pastries, and biscuits, and much less fruit, green vegetables, and bacon, than the English (Domestic Food Consumption and Expenditure, 1953 [1955]).

The influence of geography has been greatly modified by the great improvements of transport during the last hundred to two hundred years. Before the 19th century there were great differences in diet even within England: in the south it consisted mostly of bread and cheese, with a little meat and bacon; in the north it was mostly oatmeal and milk. Only the large ports like London had access to the small amounts of imported foods.

This country in particular owes a great deal to modern communications for overcoming the dietary restriction imposed by geographical availability. Half of our food comes from overseas, both to supplement what we already grow (wheat, apples, cauliflower, potatoes, meat) and to give us foods we do not ourselves grow (vegetable fats, citrus fruits, tea, coffee, rice). Our choice of diet would indeed be restricted without modern means of transport.

Season

In many countries some foods are available only at certain seasons. Up to two or three centuries ago, this was also true to a large extent in this country. The winter diet of Britain was chiefly bread and salt pork; milk, cheese, and eggs were not easily available since it was not known how to maintain livestock adequately through the winter. It is often still true that the fruits of the earth are available only in their season. But in the industrially advanced countries the situation has now changed appreciably because of the improvement both in transport and in the methods of food preservation—canning, freezing, drying.

Economics

The rôle of economic factors is evident from study of the diets of different countries, or within one country from study of the diets of people of different degrees of wealth. Foods containing chiefly carbohydrate are on the whole cheaper than those containing chiefly protein or fat, and foods nutritionally less desirable cheaper than those nutritionally more desirable. With an increase in national income the intake of protein and fat increases, whilst that of carbohydrate stays fairly constant (table I).

TABLE I—RELATION BETWEEN NATIONAL INCOME AND DIET

Average annual income ($)	No. of countries	Average daily intake					
		Calories	Protein (g.)	Animal protein (g.)	Fat (g.)	Carbohydrate (g.)	Sugar (g.)
Less than 100	4	1880	48	11	34	345	42
100–200	9	2310	68	16	43	412	44
200–300	3	2590	77	27	68	416	63
300–400	4	2740	81	45	93	396	90
400–600	5	3070	92	46	112	424	84
Over 600	8	3210	95	58	129	416	122

Data compiled from Food Balance Sheets (Food and Agriculture Organisation, Rome, 1955) and from Statistics of National Income and Expenditure (Statistical Office, United Nations, New York, 1955).

There is also incidentally an increase in the consumption of sugar, implying a decrease in the consumption of other carbohydrate-rich foods like cereals and tubers—a fact to which I shall refer later. In any one country there is a similar dependence of the composition of the diet on income. In Britain these differences still exist, showing themselves chiefly as a decreased consumption of the more expensive and more nutritious foods with an increase in the size of family (table II). The amount of money available for food may be affected by a variety of factors. M'Gonigle and Kirby (1936) showed that the transference of people from slums to new houses, with higher rents, reduced the nutritive value of the diets. Tobacco and drinks may also be a prior call on income before food is bought. And in Peru and Bolivia the chewing of coca leaves by the chronically undernourished Indian, primarily to relieve hunger, leads to an even greater degree of malnutrition since the purchase of coca leaves reduces still further the amount of money left for food (Verzár 1955).

Under the heading of economic factors affecting food choice I include impositions by the State, such as

* Inaugural lecture delivered on appointment to the new chair of nutrition in the University of London.

TABLE II—EFFECT OF FAMILY SIZE ON AVERAGE WEEKLY CONSUMPTION OF SOME FOODS *

	No. of children				
	0	1	2	3	3+
Milk (pints)	5·7	5·6	5·4	4·9	4·9
Meat (oz.)	44	33	27	24	22
Eggs	5·5	4·3	3·8	3·3	2·7
Vegetables, except potatoes (oz.)	43	35	29	24	22

* From Domestic Food Consumption and Expenditure, 1953 (1955).

rationing, though these may have political as well as economic bases. Effective rationing ensures a more even distribution of specified foods both by restricting the highest levels of consumption and by increasing the lowest levels. This was achieved in Britain by the triple system of ration-books, price control, and subsidies. As a result of these factors, the variation of consumption with income was much reduced for commodities such as meat, cheese, eggs, and milk. I also include here the schemes for the distribution of milk to nursing mothers, young children, and school-children. A large part of the present high consumption of milk—nearly 40% more than before the war—is undoubtedly due to these schemes.

Other Factors

Before leaving physical factors, let me refer to two others—food technology and fuel. Food technology has, as we have seen, made available foods far from their origin, and far from the time of harvesting or slaughtering. It has also made available new foods, some of considerable importance, like margarine.

The shortage of fuel in this country two hundred years ago, and in countries like India up to the present, necessarily restricts the sorts of foods which will be eaten. Thus, it will be useless to provide India today with foods, however palatable and however nutritionally desirable, if their preparation is beyond the resources of the stone hearth and cow-dung fuel.

Social Factors

Religion and Social Custom

The effect of religion on food choice is best known through its prohibition of the eating of pork by Jews and Moslems and of beef by the Hindu, and of meat-eating on Fridays and throughout Lent by the Roman Church. Vegetarianism is met with in many religions—examples include again the strict Hindu Brahmin, as well as the Jains of Indian and the Kikuyu of East Africa. The origins of these religious taboos are not always clear; though early ideas of hygiene played a part, economic factors were probably in many peoples more potent causes. The nutritional effects may be enormous; Orr and Gilks (1931) have shown how the vegetarian Kikuyu are nutritionally far inferior to the neighbouring meat-eating Masai.

Social custom may dictate a variety of strange food habits. In many countries common foods may be prohibited at certain times, such as pregnancy or lactation, or during illness or mourning; or other unusual foods may be eaten at these times. Insects are an acceptable food in Mexico, Nigeria, and Siam and to the aboriginals of Australia (Bristowe 1953). In Latin America, foods are divided into "hot" and "cold" (Wellin 1953). The former may be consumed at any time; the latter only by healthy adults, but not in the mornings and only if their cold effects are neutralised by hot tea. Foods are also divided into "heavy" or indigestible (for example, rice, milk, dates, figs) and "light" or easily digestible (mutton, chicken, bananas, carrots). Apart from milk, young children are not given heavy foods. Natural sweet foods—that is, fruits—are not compatible with prepared sweet foods containing sugar, and must not be eaten together.

Such customs usually are very strong and resistant to change. Jews from the Arab countries who have recently migrated to Israel greatly resented the new foods which were imposed on them by the strenuous system of rationing there. Even after several years they seek every means to revert to their original food habits—to use many spices, to take rice rather than wheat, and to use vegetable oil rather than other fats (W. Strauss, personal communication).

Social Class

There is commonly an appreciable difference in food habits between different social classes. In this country it shows itself in a preference by the so-called upper classes for brown bread rather than white, for bitter marmalade rather than sweet, for coffee instead of tea, for coffee without rather than with milk, for savouries rather than sweet puddings, and for the avoidance of such foods as kippers and tripe. These preferences, however, are not static since they occur or are cultivated also in those who are ambitious to move upwards in the social scale. The reverse is seen in the Hampstead and Chelsea intellectual who cultivates a preference for tea and kippers—a form of inverted food snobbery. The chief difference between social classes is the increasing range of foods eaten as the social scale is ascended. It is difficult to get working-class peoples to try new foods; on the other hand, trying new foods is almost a prerequisite of the socially superior. The origin of these customs is clearly economic.

Education in Nutrition and Hygiene

Here I include those ideas of food values and food hygiene, whether sensible or nonsensical, which a group, a school, a society, or even an individual actively propagates. As examples of hygiene propaganda, I may quote the acceptance by most people of pasteurisation of milk as a sensible hygienic measure (which it is) or of leaving foods in tins as hygienically dangerous (which it is not). Sometimes, sensible nutritional propaganda is effective, and it is possible that some part of the present high consumption of milk is due to the acceptance of propaganda that milk is a nutritionally desirable food. We have seen, however, that probably a greater part of this high consumption is due to imposed State policy. Somehow, it seems easier for people to accept food nonsense than food sense. It may be quite difficult to persuade people to drink milk and eat vegetables and fruit, but much easier to persuade them to take yogurt, molasses, brewers' yeast, and wheat-germ, or to eat their meat and their potato at separate meals. Fortunately, it is often true that the vogue of these fashions is usually amongst the wealthy members of the community who are likely, almost without wishing it, to take what eventually adds up to a reasonably adequate diet. But there have been examples where restrictions of food choice imposed by one or other of these fads have proved harmful to those who have been duped.

It would be interesting to speculate on some of the underlying reasons which make people susceptible to this sort of propaganda. Let me mention only one—the hankering after naturalism. Probably as a reaction to some of the less pleasant manifestations of civilised life, it is easy to persuade people that natural foods are likely to be superior to sophisticated foods. Hence the conviction amongst many that fresh vegetables are nutritionally superior to canned vegetables, or that butter is nutritionally superior to margarine; neither of these statements is true.

In general, however, food habits as we have seen are established so early in life and so firmly that they are little affected by propaganda. When new knowledge is accepted at all, it tends to become moulded so as to fit the existing culture. Thus, villages in Peru to which something about vitamins has percolated have kept to

their original non-nutritional classification of good and bad foods, but now attribute these different qualities to the presence or absence of vitamins. They have also decided that there is a hierarchy of vitamins, the best being vitamin A, the next best vitamin B, and so on (Wellin 1953).

Advertising

In this country, something like twenty million pounds a year is spent on advertising foods—more than is spent on any other class of goods. Yet it appears that the result of advertising is far less to make people eat a particular food, than to make them eat brand A rather than brand B of that food. The sales of the different brands of breakfast cereals is in direct proportion to the money spent on advertising them; it is difficult to avoid the conclusion that if firm B were to spend as much as firm A on advertising, their sales would rise until they were equal to that of firm A.

Other Social Factors

Another social determinant is the status of a person or group. Thus, the head of a tribe or of a family may be considered to have a first claim on the more desirable foods. In many cultures this takes the form of the father being given most of the meat or eggs, irrespective of the nutritional needs of the mother or the children.

Finally, the choice of food may sometimes be determined by convenience. Consider a woman in a Western community who lives alone and goes out to work. She may consider it not worth while making herself a cooked breakfast; she may take sandwiches for lunch; for her evening meal it may be too troublesome to cook meat and vegetables, so she opens a tin of beans. Such people, even without undue economic pressure, are often found to be consuming diets which are nutritionally unsound. Scurvy is still most often found in this country in lonely people whose diet is conditioned chiefly by convenience of preparation.

Physiological Factors

Heredity

Experiments with animals have shown that, in conditions in which they show an ability to choose a sound diet, individual animals show this ability in different degrees, and that this ability may be inherited (Dove 1935). Whether man has a similar inheritable ability is quite unknown, but if it exists one might speculate quite interestingly on its effect on man's evolution.

Allergy

A surprisingly large number of people—probably as many as 1 in 20—are allergic to foods, even to such common foods as wheat, eggs, and milk; and allergy to shellfish or strawberries is well known. The identification of the offending food may be easy or difficult, but once identified or even suspected (perhaps wrongly) the pattern of food choice is modified.

Therapeutic Diets

The choice of food is modified by the prescription of a diet for a patient, but the extent of the modification will depend greatly on how closely the patient follows the doctor's instructions. The patient may sometimes be wise in not keeping too rigidly to a prescribed diet; iatrogenic scurvy is not unknown in dyspeptic patients whose diets have been constructed with great rigour but with less nutritional knowledge.

Acceptability

It may or may not be justifiable to call this factor physiological, but I do so because it depends very much upon the individual. I include in it the presentation of food, its palatability, and its possible pharmacological activity. A food of unpleasant appearance, badly served, of the wrong colour, even in an unattractive wrapping when offered for sale, will not be consumed so readily. That is why artificial colours are used in the food industry. That is why you will not get people to eat cakes covered with blue icing as readily as cakes covered with pink icing. That is why the housewife will often add soda to her peas when cooking them, whatever anyone says about it destroying vitamin C.

I need say little about the obvious effects of palatability on food choice. I would, however, point out that, with little or no propaganda, tomatoes and grapefruit have in very recent times become widely accepted foods in this country and that the main factor is undoubtedly their palatability. Similarly, I would refer to the consumption of sugar, which in this country is now some thirty times what it was two hundred years or so ago, and as we have seen depends in different countries on the national wealth. Nutritionally, sugar has the doubtful distinction of being the least desirable food, since unlike every other food it contributes nothing whatever except calories to the diet.

Another reason for a food being acceptable is that it has a desirable pharmacological action. It is surely noteworthy that almost every community throughout the world has independently discovered the production of alcohol by fermentation. Similarly, many countries have discovered a plant from which a concoction may be prepared containing the stimulants caffeine or theobromine—tea, maté, coffee, cocoa, and cola.

Nutritional Need

We come finally to the choice of foods for the satisfaction of nutritional need. Whilst exact dietary analyses are rarely available, we may take it that from most varied foods in different parts of the world man often chooses a nutritionally adequate diet, provided he has not been limited by such factors as economic availability. Can we take it then that man and animals have an instinct in food choice which drives them to satisfy their nutritional needs? Let us see what sound evidence exists both for man and for animals, as distinct from unlikely anecdotes.

Some of the best-known experiments in human beings were made by Dr. Clara Davis (1928, 1939). Her subjects were infants who were offered at weaning a selection of foods and who ate what foods and in what quantities they chose. Some of them were observed in this way for six years. All of them chose diets which were nutritionally absolutely sound. Now this would appear to prove that infants indeed possess an adequate food instinct. It has also been argued from this that the corollary is also true—that whatever food people do choose to eat must be nutritionally desirable. This is responsible, for example, for the widespread belief that sugar is desirable for children.

Yet there are many examples where man cannot at all be relied upon to make a wise nutritional selection of foods. I have already referred to the Kikuyu, where economic but chiefly social factors determine that they eat a poor diet. Another example is the Indian or Chinese who eats polished rice. How potent is the food instinct which does not teach him to avoid beriberi and imminent death by eating instead unpolished or parboiled rice? Moreover, the experiments of Dr. Davis did not tell us what would happen if children were allowed to select from diets which included nutritionally less desirable, or even undesirable, foods instead of only good foods. What would have happened, for example, if sugar and sweet cake and jam had also been offered? Again, the children seemed to have spent some time deciding what foods they preferred; during the first few weeks they tasted most of the foods, but later they settled down to a more restricted diet. This suggests that learning rather than instinct guided their choice—a point to which I shall return.

Having said all this, we cannot overlook the fact that man does frequently and from so many different sources

choose his diet wisely. Since observations on man have not given us any completely satisfactory explanation of this, let us turn to the experiments on animals.

The most important and by now classical experiments in this field were those reported by Harris and his collaborators from Cambridge (Harris et al. 1933). They found that rats depleted of vitamin B_1 will choose a diet containing it in preference to one that does not. An animal may be sufficiently confused by a wide array of possible choices that it cannot select, but it can be taught to recognise the correct diet. Again, it may be deceived by giving it a deficient food with a flavour which it has previously learnt to associate with the vitamin-containing food, but once more it can be re-educated to the correct food.

Harris explained these findings on the basis of learning. The condition of the deficient animal is so rapidly improved when he eats the right diet that he soon learns to associate this with the resulting feeling of well-being.

Since that time, many examples have been reported by other workers of the ability or otherwise of animals to choose a correct diet (see Lepkovsky 1948, Scott and Verney 1948). Adult rats, offered a diet of pure nutrients in separate containers—for example, five containers with protein, fat, carbohydrate, mineral elements, and vitamins—can select an adequate diet; they do not do so, however, when they are very young or during pregnancy or lactation. Rats rendered deficient in vitamin B_1 or riboflavine or pyridoxine or calcium select an adequate diet, but rats rendered deficient in protein or vitamin A or vitamin D do not do so. If deprived of the adrenal glands, an operation whose effects are relieved by taking salt, they would choose a salt-containing diet. If deprived of their pancreas, a condition relieved by avoidance of carbohydrates, they reduce their intake of carbohydrates. And finally, we have recently shown that rats deprived of vitamin B_1 reduce their intake of sugar, some avoiding it entirely and surviving for long periods.

All of these results support the view of Harris that a deficient animal learns to choose the correct diet when by so doing he rapidly feels better. Where the deficiency is of a nutrient like vitamin A, or vitamin D, which does not lead to a correct choice, the explanation is that the correction of the deficiency does not produce improvement rapidly enough for the animal to learn to associate the improvement with the food which gave rise to it. Even one apparent exception to this supports the learning theory. Animals rendered deficient in magnesium *avoid* diets containing this element; it seems that magnesium deficiency results in a sort of intoxication which the animals find pleasurable, and that they learn to avoid eating magnesium in order to preserve this sensation.

It has been suggested that nutritional choice is brought about by some inner drive or instinct by which the animal is made to seek out a food containing the appropriate nutrient (Richter 1947). My own reading of the evidence at present available is that the theory of learning, as developed by Harris, is much the more likely explanation.

One more animal experiment is worth quoting. If animals from whom the adrenal glands have been removed are offered a choice between water and a salt solution, they choose the salt and so live much longer. If, however, they are offered a choice between sugar solution and salt solution, they tend to take the sugar, and die sooner (Harriman 1952). We can therefore modify Harris's theory to the extent of saying that a wise nutritional choice may be prevented if a sufficiently palatable but nutritionally unsuitable food is offered too.

What then are the general conclusions we may draw from such animal experiments? First, animals presented with individual nutrients are sometimes able to select these in such a way as to satisfy their nutritional needs. Their ability to do so depends on age, physiological state—e.g., whether or not they are pregnant—and heredity; and some do it better than others.

Secondly, a deficient animal will select the missing nutrients, and perhaps also avoid harmful ones, if the beneficial or harmful effect is fairly considerable and occurs fairly quickly.

Thirdly, it seems to follow from this that the correct choice of individual dietary items is not due to an instinctive urge but to learning: that animals learn to associate the consumption of the right food with the feeling of well-being induced by it. This would also explain why people have come to like alcohol or tea or coffee or cola.

Fourthly, a nutritionally wide choice may be diverted to one which is unwise or even fatal by offering a palatable but, in the circumstances, worthless food.

These conclusions, interesting as they are, still do not provide the whole answer. They do not explain why man, with quite different foods at his disposal in different parts of the world, is usually capable of showing nutritional wisdom in his choice of food, provided he is not limited, by, for example, economic circumstance or by nutritionally unsound social pressure.

A possible explanation might be that it is a result of experience. By experience, translated into and transmitted by social custom, man has learned what foods to select to maintain reasonable if not perfect health. That is to say, the food habits of a people, which begin to be formed from the moment of birth, have been built up on the experience of previous generations who themselves have learnt by trial and error.

But to my mind this is still an inadequate explanation. I believe that the key to the understanding of food selection according to physiological need is something which might be called the hypothesis of satiety. If to this is added an extension of Harris's theory of learning, and the possibility of cultural transmission of patterns of food selection, then I think we can explain the phenomenon completely.

I derive the hypothesis of satiety from the observation—common to all the experiments on food choice with human beings and animals—that no person or animal will consume only one article of diet but always takes some from all or at least several of the sources available. Consider the experiment of an animal offered an array of pure nutrients. He eats a little protein, then some carbohydrate, then perhaps some fat, then more protein; in due course he consumes—or at least *often* he consumes—a nutritionally sound mixture of all the essential nutrients. The question why he will choose to eat vitamin B_1 if he is short of this vitamin we have already answered. But there are two further questions which are not answered by the learning theory. First, why does the deficient animal *stop* eating the missing nutrient after a time, and move on to another? Second, and even more important, what determines food choice in the non-deficient animal? We must accept that, with a reasonably wide variety of nutrients or foods from which to choose, the animal often makes a good enough choice to avoid deficiency altogether. He does not, as it were, wait until he is deficient in vitamin B_1 before taking this nutrient. The constant choice of an adequate diet, by man or animal, clearly therefore cannot depend on a sequence of specific nutrient deficiencies and the subsequent learning to eat the foods which correct them.

I suggest that these questions may be answered somewhat along these lines. The increase in consumption of a particular food, or of a pure nutrient, leads first to the pleasant sensation of satiety, but beyond this to an unpleasant sensation which makes the animal stop eating this food. This unpleasant sensation, such as we might get by eating too much sweet or fatty food, might perhaps be a feeling of nausea by direct action on the stomach wall, or arise from a change of taste sensation

due to overstimulation, or from an accumulation of metabolic products in the blood-stream. The animal will now stop eating that food and proceed to the next. Possibly the eating of another food relieves this unpleasant feeling; or the animal's hunger may simply not yet be satisfied, and it has learned that the eating of another sort of food will stay its hunger yet not increase its discomfort.

Whatever the reason, the animal will in this way choose a variety of foods from which it will eat its fill. We must remember that by so doing it will, even from a fairly restricted choice of foods, obtain a wide variety of nutrients, for almost all foods contain several nutrients. Should it by chance avoid some foods and so develop deficiency of one or more nutrients, it might be able to learn to eat them if the deficiency is of a nutrient whose consumption results in rapid improvement.

We must add, too, that the animal's experiences may not have to be repeated in their entirety by its offspring, especially if it is a human animal. He will be able, in varying degrees, to direct his progeny to nutritionally sound food selection by education.

Whilst this brief discussion may not provide an entirely satisfactory explanation of the complex problem of food selection and food instinct, it will I hope provide a basis for a more complete understanding of the problem than has been possible hitherto. However little ultimate value these speculations have, they will at least have done a useful service if they only delimit the area of determinants of food choice within which instinct may play its part. Remember the infant and the boot-polish.

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ANTISTREPTOLYSIN RESPONSE IN ACUTE RHEUMATIC FEVER IN CHILDREN

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IMMUNOLOGICAL studies have established beyond reasonable doubt that most patients with acute rheumatic fever show evidence of recent infection with β-hæmolytic streptococci of Lancefield's group A. The serological findings, summarised by McCarty (1952), include the repeated observation (Anderson et al. 1948, Rantz et al. 1948, Harris and Harris 1950) that patients in whom rheumatic fever develops after streptococcal infection show a significantly greater antibody response than do patients with uncomplicated infections. This seems to hold not only for antistreptolysin O (A.S.O.) but also for antibodies to streptococcal hyaluronidase, streptokinase, and possibly other streptococcal antigens.

Rantz et al. (1951) also studied respiratory infections with group-A hæmolytic streptococci and the associated A.S.O. response in infants and young children. They found three patterns of antibody response, roughly related to age: (1) a feeble response in infants, (2) a vigorous but short-lived response in young children (mean age 36·7 months), and (3) a vigorous and sustained response in older children (mean age 57·9 months). They described evidence that this sequence of antibody-response patterns, although related to increasing age, was more closely related to *repeated* streptococcal infections; and they attributed the enhanced response to conditioning of the antibody-forming organs by repeated exposure to streptococcal antigens. Rantz et al. (1951) have linked this conclusion with the finding, mentioned above, that in rheumatic fever antibody response is further enhanced, and have suggested that these observations, together with the known rarity of rheumatic fever in very young children, support the idea that "sensitisation" to streptococci or their products is closely related to the pathogenesis of rheumatic fever. If this concept were correct, the incidence of raised A.S.O. titres in children with acute rheumatic fever should be independent of the age of onset. We describe here a survey of A.S.O. levels in rheumatic children aged 3–12 years.

Material and Methods

We have surveyed all eligible cases of acute rheumatic fever with onset before the 12th birthday admitted to this hospital in the seven-year period from April, 1948. Cases were taken to be eligible only if they fulfilled the diagnostic criteria of Jones (1944) (excluding chorea as a significant feature) and were seen in their first rheumatic attack within four weeks of onset of symptoms. The survey was directed particularly at the relation of age to the frequency of raised A.S.O. titres, the geometric mean of the A.S.O. levels, the frequency of preceding upper-respiratory-tract infections (within a month of onset), and the frequency with which group-A β-hæmolytic streptococci were recovered from the patients.

Throat and nose swabs were taken from each patient on admission and after one week, and were plated respectively on horse-blood agar and on the same medium containing gentian-violet (1/500,000). Hæmolytic streptococci recovered were tested for group-A-specific polysaccharide by Lancefield's (1933) method.

Venous-blood samples were taken on admission and at weekly intervals for serum-A.S.O. estimations. The highest titre found within four weeks of admission was recorded for this survey. Antistreptolysin was estimated by a method (Johnson 1955) based on Hodge and Swift's (1933) modification of Todd's test. This serological method was standardised with Todd's horse antiserum as a reference and gave consistent results throughout the seven years of the study, except for the period October, 1952, to July, 1953, when the standard globulin solution underwent gradual and, at first, unnoticed deterioration. When this was discovered a new standard globulin preparation was obtained and cases admitted during this nine-month period have been excluded from the survey. Were they included, the outcome of the analysis would not be materially affected. Excluding this period, the mean A.S.O. levels did not vary significantly from year to year, either in the group included in this study or in all A.S.O. estimations carried out in the laboratory. We have taken the arbitrary value of 200 units or more per ml. to indicate significant antibody response to streptococcal infection.

Results

The criteria for selection were fulfilled by 121 cases, of which 14 were excluded because they fell in the unreliable serological period. Of the 107 remaining cases, 55 were in boys and 52 in girls. At each age, the distribution between the sexes was approximately equal.

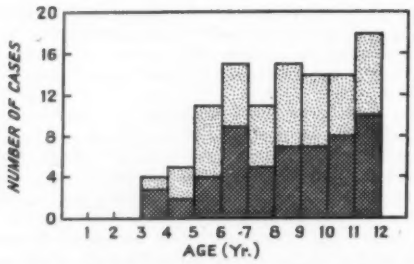

Fig. 1—Age at onset of rheumatic fever and sex-distribution (*thatched*, boys; *stippled*, girls) of 107 cases surveyed.

The distribution of cases by years of age at onset is shown in fig. 1. The number of cases in children under the age of 5 is small—a usual finding.

The frequency of antistreptolysin-O titres of 200 units or more per ml. for the nine age-groups is shown in table I together with the geometric mean A.S.O., the frequency with which group A β-hæmolytic streptococci were recovered at admission or within one week, and the frequency of preceding upper-respiratory-tract infection within a month of onset of rheumatic symptoms (median period of 13 days).

Because the numbers in each of these nine age-groups are small consecutive age-groups have been amalgamated into four groups for statistical analysis (table II). The four summed age-groups shown in table II show no significant differences in the frequency of upper-respiratory infection and group-A β-hæmolytic streptococcal isolations; but both the frequency of elevated A.S.O. titres and the mean A.S.O. titre is less in the younger children, particularly in the under-6 age-group. This is shown clearly in figs. 2 and 3. This difference between the youngest age-group and the remainder is statistically significant ($\chi^2=12{\cdot}6$, $n=1$, $p<0{\cdot}001$).

TABLE II—DATA IN TABLE I REARRANGED UNDER FOUR SUMMED AGE-GROUPS

—	Age (yr.)				Total
	Under 6	6 to under 8	8 to under 10	10 to under 12	
No. of cases	20	26	29	32	107
A.S.O. titres:					
No. raised ..	9 (45%)	20 (77%)	25 (86%)	27 (84%)	81 (76%)
Mean (units per ml.)	144	288	345	380	288
Upper resp. infection (no. of cases)	10 (50%)	16 (61%)	12(41%)	18 (56%)	56 (52%)
Infection with group-A β-hæmolytic streptococci (no. of cases)† ..	9 (45%)	10 (39%)	15 (52%)	13 (41%)	47 (44%)

Discussion

We have not been able to detect any selection bias in the youngest age-group, such as a more frequent administration of penicillin in the treatment of the preceding upper-respiratory-tract infection. It would be desirable to examine a larger series in order to avoid summation in the younger age-groups, but the frequency of attacks of acute rheumatic fever among children under 6 years of age is low; in the present seven-year survey, only 20 such children were admitted to this unit who fulfilled the necessary criteria of diagnosis, activity, and age. These children differed essentially from those in older age-groups only in their lower antistreptolysin-O level (fig. 4). This is contrary to the earlier findings of Coburn and Pauli (1935), according to which A.S.O. levels in rheumatic children showed, if anything, a tendency to lower levels with *increasing* age.

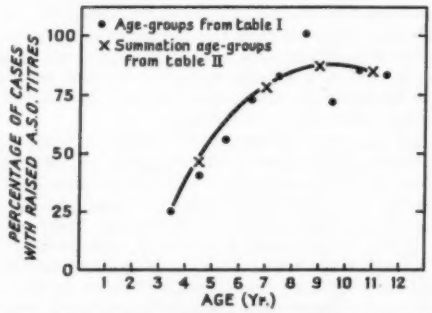

Fig. 2—Age and percentage of cases with raised A.S.O. titre (200 units or more per ml.).

The present results show, then, that both the mean A.S.O. level and the proportion of cases with raised titres are significantly lower in very young rheumatic children than in children over 5 years old. These differences are also found, though not to a significant degree, in the 6–7 age-group.

We have also compared the levels with those in a small group of 40 children under the age of 12 years admitted to this unit with conditions unrelated to rheumatism (including 13 children under 6 years). In this group the mean A.S.O. titre for those under 6 years was 49 units per ml. (15% raised) and for those aged 6 years and more 105 units per ml. (41% raised). It is therefore clear that in the youngest rheumatic group, although the titres are relatively diminished, the mean level of these titres and the frequency of raised titres are considerably higher than in non-rheumatic cases of a similar age in hospital. We have not, however, had an opportunity of making a comparison with healthy children of various ages after β-hæmolytic streptococcal infection.

Powers and Boisvert (1944) have demonstrated an alteration in the natural history of streptococcal respiratory disease during the early years of life; the ill-

TABLE I—RELATION OF AGE TO A.S.O. LEVELS, PRECEDING UPPER-RESPIRATORY-TRACT INFECTION, AND RECOVERY OF GROUP-A β-HÆMOLYTIC STREPTOCOCCI

—	Age (yr.)									Total
	3–	4–	5–	6–	7–	8–	9–	10–	11–	
No. of cases	4	5	11	15	11	15	14	14	18	107
A.S.O. titres:										
No. raised	1 (25%)	2 (40%)	6 (55%)	11 (73%)	9 (82%)	15 (100%)	10 (71%)	12 (85%)	15 (83%)	81 (76%)
Mean (units per ml.) ..	89	112	199	282	295	389	309	372	389	288
Upper resp. infection (no. of cases)	2 (50%)	3 (60%)	5 (45%)	8 (53%)	8 (73%)	6 (40%)	6 (43%)	6 (43%)	12 (66%)	56 (52%)
Isolation of group-A β-hæmolytic streptococci (no. of cases)	2 (50%)	2 (40%)	5 (45%)	5 (33%)	5 (45%)	9 (60%)	6 (43%)	6 (43%)	7 (39%)	47 (44%)

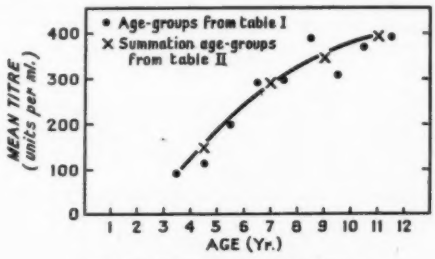

Fig. 3—Age and mean A.S.O. titre.

localised indolent streptococcal infections of infants are gradually replaced (by about the age of 5) by a more acute, and clinically well-defined, pharyngitis. This altered response, they suggest, is related to sensitisation to streptococci through repeated infections. Rantz et al. (1951) have shown that such repeated streptococcal infections in young children lead to a striking enhancement of the antibody response; their findings therefore support the idea that sensitisation (i.e., increased antibody response) to streptococci tends to develop in childhood. It is known that repeated infections with group-A hæmolytic streptococci commonly precede attacks and recurrences of rheumatic fever and this, together with the well-established increase in antibody response which most rheumatic subjects show, has supported the concept that rheumatic fever itself is a phenomenon of sensitisation. The results reported here suggest, on the contrary, that in young children with acute rheumatism this state of sensitisation is not uncommonly poorly developed and should therefore probably be regarded as dissociated from the mechanism by which streptococci induce rheumatic fever.

Summary

107 children with acute rheumatic fever, aged 3–12 years, showed no age differences in the frequency of preceding upper-respiratory-tract infection, or of positive throat or nose swabs for group-A β-hæmolytic streptococci.

20 children included in this study were under the age of 6 years; these showed a significantly lower frequency of raised antistreptolysin-O titres, and a significantly lower mean titre, than those over 6 years of age.

This result suggests that, contrary to the current concept, the pathogenesis of rheumatic fever is not primarily related to the sensitisation to streptococci or their products that commonly occurs in childhood.

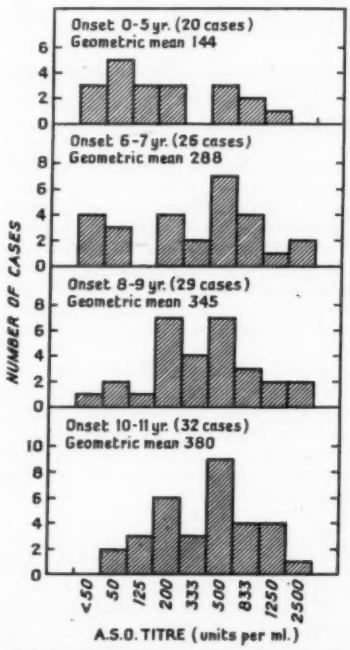
Onset 0-5 yr. (20 cases)
Geometric mean 144
Onset 6-7 yr. (26 cases)
Geometric mean 288
Onset 8-9 yr. (29 cases)
Geometric mean 345
Onset 10-11 yr. (32 cases)
Geometric mean 380
NUMBER OF CASES
<50 50 125 200 333 500 833 1250 2500
A.S.O. TITRE (units per ml.)

Fig. 4—Distribution of actual A.S.O. titres in the four age-groups.

The standard globulin preparation obtained in July, 1953, was kindly sent by Dr. B. F. Massell, the House of the Good Samaritan, Boston, Mass., U.S.A.

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PALLIATIVE HORMONE THERAPY OF ADVANCED MAMMARY CANCER

REVIEW OF 106 PATIENTS STUDIED IN SEVEN YEARS

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It has long been known that the ovaries influence the growth of the breasts, and that oöphorectomy sometimes causes breast cancer to regress (Schinzinger 1889, Beatson 1896, Boyd 1900, Morris 1902, Thompson 1902, Lett 1905a and b).

Haddow (1935) found that certain carcinogenic hydrocarbons retarded experimental malignant growths in laboratory animals, and some of these substances had an œstrogenic effect. This discovery led to a trial of synthetic œstrogens for carcinoma of the breast. Most workers agreed on the value of œstrogens in postmenopausal women and that the best responses were obtained in soft-tissue metastases, with little benefit in skeletal metastases.

Androgens were given to patients with breast cancer to inhibit œstrogens which might be stimulating the growth (Loeser 1938, 1939, 1940, McWhirter et al. 1944, Adair and Herrmann 1946, Herrmann and Adair 1946, Cutler and Schlemenson 1948, Prudente 1948, Lowenhaupt and Steinbach 1949, Douglas 1952, Hallberg et al. 1953).

It is now considered that some breast cancers are dependent on œstrogens, whose removal will improve the prognosis. This view is emphasised by Cade (1955) and Dodds (1955).

The insufficiency of oöphorectomy and/or androgen therapy gradually became evident. Œstrogens secreted by the adrenal cortex are increased after oöphorectomy because the adrenal glands then hypertrophy. With the advent of cortisone to control patients during and after operation it was logical to remove the adrenal glands. Since Huggins and Dao (1952) and Huggins and Bergenstal (1952) reported a series of cases so treated, adrenalectomy and oöphorectomy have been widely practised for the young patient with advanced metastases. If extirpation is complete, only those cases which presumably depend on œstrogens show a rapid and dramatic improvement and a recession of tumour growth which may last several months.

All workers are agreed that there is no means of determining which case depends on œstrogens, and can then be expected to improve under treatment, except trial of hormone therapy. This takes several weeks, but there is a dramatic response one to six days after adrenalectomy if the tumour is œstrogen-dependent.

Old postmenopausal patients often show a spectacular temporary remission, particularly of soft-tissue lesions, after large doses of œstrogens—possibly owing to a

local effect as well as to inhibition of the anterior lobe of the pituitary gland.

Material

This paper is an analysis of 106 cases of breast cancer treated with either œstrogen or androgen in women who died in a period of seven years, and the following data relate to the patients' state when accepted for hormone therapy.

All the patients had advanced stage-IV cancer of the breast and had already received all possible benefit from either X-irradiation or surgery or both, or else the lesion was too far advanced for anything except palliative hormone therapy.

Previous treatment.—Of the 106 women 3 had had surgery alone, 10 X-irradiation alone, 82 surgery and irradiation, and 11 no treatment.

Histology.—78 patients had histologically proved carcinoma, but Broders's grading was not stated in many of the pathological reports. Records of histology were missing in 7. There were no pathological reports in 21 cases which were much too advanced for surgery and in which the diagnosis was obvious on clinical findings.

The *duration of disease* before the start of hormone treatment was as follows: 94·5% of the women had had the cancer for 6 months, 86·0% for 1 year, 68·0% for 2 years, 48·0% for 3 years, 34·0% for 4 years, 21·0% for 5 years, 10·4% for 7 years, and 4·0% for 10–15 years.

Connubiality.—24·6% of the patients were single and 75·4% married.

Age-distribution.—9 patients (8·5%) were aged less than 40, 61 (57·5%) were aged 41–60, and 36 (34%) were aged 61 or more.

The menopause had occurred in 81%, and of these it had followed either irradiation or oöphorectomy in 12·6%.

Pregnancy or miscarriage was recorded in 55·6%.

Distribution of metastases was as follows:

Axillary, supraclavicular, or other lymph-nodes	74·5%
Skin nodules, ulceration, or infiltration	70·0%
Bones	52·8%
Lungs or pleura	33·0%
Other breast	21·7%
Other sites	14·3%

Some patients had metastases in several or all of these sites.

General condition.—Advanced cardiovascular disease was found in 8·5%. The general nutrition was good in 37·8%, but 56·5% had lost weight up to 2 st. and 5·7% more than that.

Methods

All the patients were interviewed and examined monthly or every two months according to their condition and response to treatment. Serial records of weight, hæmoglobin, erythrocyte-sedimentation rate (E.S.R.) (Westergren), and blood alkaline and acid phosphatase were kept. Changes in lesions were recorded photographically or followed on serial radiographs.

Œstrogen Therapy

Originally the British Empire Cancer Campaign wished to compare the effect of low dosage (0·3 mg. q.i.d.) with that of high dosage (5 mg. q.i.d.) of stilbœstrol. Printed forms were received, and patients were allocated at random to the dosage printed on these; by this means no individual selection of high or low dosage was made by each investigator. Patients were, if possible, kept on their allotted dosage until death. A change to high dosage was made only if it was obvious that no effect was being obtained from low dosage. Similarly, on occasions the dosage had to be lowered if symptoms of toxicity were intolerable.

Much individual variation was noted in tolerance within the dosage range 0·3–5·0 mg. q.i.d. After preliminary nausea, anorexia, flatulence, or giddiness most patients became gradually tolerant, but a few remained unable to take stilbœstrol. In my experience small doses of this hormone are practically valueless; hence early doses of 5 mg. q.i.d. are advocated, with increase of this amount to as much as 50 mg. q.i.d. if required.

Although the œstrogen was usually stilbœstrol, occasionally ethinyl œstradiol was substituted because of intolerance or sometimes when large dosage was required.

Androgen Therapy

57 patients were treated with androgens—of these, 6 were aged less than 40, 38 were aged 41–60, and 13 were aged 61 or more; 35 of these (61·4%) had bone secondaries when first seen.

To determine whether androgen therapy was of benefit or not, it was decided to give the largest possible tolerated dosage and to maintain this until there was some clinical or radiographic improvement, or until it was obvious that the patient was rapidly deteriorating. When this trial started, it was necessary to collect as many cases as possible for inclusion in the British Empire Cancer Campaign trial of low and high dosages of œstrogen, and some of the early cases were so treated although bone secondaries were present, when better judgment would have indicated treatment with androgens. However, after some experience, the younger patients and those with osseous metastases were given only androgens.

The high dosage chosen, 300 mg. daily, was not limited at first by expense, because adequate material was freely available through the generosity of several firms.

Most patients treated with androgens were given daily injections, but some, too thin to tolerate repeated treatment by this route, or to give them a brief rest, were given oral therapy with either methyl androstenediol or methyltestosterone. A few were also treated with implants of testosterone or of testosterone propionate for various reasons—e.g., difficulty of regular attendance and supervision.

Large dosages of androgens were usually continued indefinitely, even when patients were in a quiescent stage in reasonable health, though often the frequency of dosage was lessened, only to be restored with signs of further deterioration or spread.

For example, in a patient who survived for 260 weeks, the following enormous doses were given: 60·7 g. of testosterone propionate, 84·0 g. of testosterone isobutyrate, 10·5 g. of methyl androstenediol by injection and 8·4 g. by mouth, and 6·72 g. of methyltestosterone by mouth up to about a month before death.

In the patients who had been menstruating until the start of treatment amenorrhœa persisted.

Toxic Effects

Œstrogens

The well-recognised toxic effects of stilbœstrol and ethinyl œstradiol are common even with minimal dosage for endocrine dyscrasias, but (as already stated) a much bigger dosage was believed to be necessary and was given. Hence it is not surprising that 40·3% of the patients so treated complained of toxic effects. It was necessary to encourage these patients to persevere with the prescribed dosage, and usually tolerance improved. Some patients assimilated 160–200 mg. of stilbœstrol daily.

Toxic symptoms noted were anorexia, flatulence, nausea, retching, sometimes vomiting, dizziness, and general malaise. These symptoms developed either early or late in treatment; in the latter case they were possibly due to hepatic metastases impairing detoxication. Often these patients were lethargic, dehydrated, and wasted, with dry inelastic sallow skin.

Androgens

Only 29·8% of the patients treated with androgen complained of nausea or vomiting. Sometimes it was necessary to reduce the daily dosage, and potassium citrate and a powder of magnesium trisilicate and bismuth carbonate were of value. In view of the suggestion that the toxic effect in the earlier cases in this series treated with massive therapy was due to hypercalcæmia, the

serum-calcium level was investigated on many occasions but was never found significantly raised.

Side-effects

Œstrogens

Postmenopausal bleeding was not uncommon in patients taking a small ineffective dosage of 0·3–1·0 mg. q.i.d. for a month or so; treatment had then been stopped by either the patient or the doctor. The correct procedure is to increase the dosage to 5 mg. q.i.d. and to impress on the patient the importance of not interrupting regular therapy. With 5 mg. q.i.d. interval bleeding takes place only rarely, and then perhaps after the tablets have been omitted for a day; if patients were given continuous therapy with 20 mg. q.i.d. or more for many months, there was no bleeding. Withdrawal of œstrogen caused bleeding in 31·2% of 61 menopausal cases: 10 of them bled on a dosage of stilbœstrol from 0·3 mg. q.i.d. to 5 mg. q.i.d., and 9 on one of 5·0 mg. q.i.d.; of the 42 remaining patients 2 on 0·3 mg. q.i.d. had not bled in seven and eleven weeks before death, and no report was available for 1 patient who discontinued attendance. In 30 patients who received 5·0–50 mg. q.i.d. there was no bleeding during their treated lifetime—sometimes for as long as 125 weeks. There was no bleeding in 3 patients while having ethinyl œstradiol 0·05 mg. q.i.d. or more, in 1 patient while having œstradiol benzoate 10 mg. on alternate days, and in 5 patients while having stilbœstrol 1–5 mg. q.i.d. in addition to a daily dose of 100–300 mg. of testosterone propionate by injection.

Pigmentation was striking in some patients, particularly the older group and in those who were normally darkly pigmented, and in this series it developed in 32·8%. It was very intense around the nipples and areolæ, the linea nigra, and the perineum, and in senile keratoses. The colour varied from dark brown to almost black. The nipple of an irradiated breast was often less pigmented than that of the other breast. After months of therapy the pigmentation often disappeared, even though big doses were continued. In association with this there was sometimes sufficient keratinisation of the nipples to give them a greyish black tinge which, like the pigmentation, ultimately disappeared, leaving a paler smooth nipple.

Œdema of the ankles and lower legs was not unusual with continued large dosage, and sometimes the œdematous arm on the side of the radical mastectomy was still further enlarged. Rarely in some of these old patients congestive failure was precipitated, but it was usually only necessary to restrict the intake of salt and to give an oral diuretic—e.g., 'Mercloran' and acetazolamide.

Androgens

Side-effects with androgens naturally depend on the duration of treatment and the dosage, but there was also an individual susceptibility. The most powerful known action of androgens is anabolic, with retention of nitrogen and sodium, increasing the weight of many patients, and making their muscles noticeably larger and firmer though the patients had advanced cancer. Much of the benefit of androgen therapy is probably due to this effect, with subjective improvement of appetite and sometimes an increase in well-being and energy, enabling patients to continue their work or their domestic duties. There was often pronounced plethora.

The unpleasant side-effects are those of virilisation. This varied from one patient to another: some were rapidly affected, whereas others, who survived only a short time, showed very little virilisation. The distribution of signs of virilisation, expressed as a percentage of patients treated with androgens, was as follows:

Sign of virilisation	*No. of patients*
Hirsutism	33 (*58·0%*)
Voice change	26 (*45·5%*)
Enlarged clitoris	15 (*26·3%*)
Acne	11 (*19·3%*)

Hirsutism was the most embarrassing and unpleasant side-effect for the patient and was often very considerable. Not only was there an intense growth of long coarse hair on the cheeks, upper lip, chin, and general beard area but also the excess hair on the body, arms, and legs was considerable. It is the former, however, to which the patient naturally objects. Patients developing hypertrichosis were all recommended to shave daily, preferably with an electric razor, and not to resort to depilatory agents such as wax, pumice, emery paper, electrolysis, and plucking, all of which methods tend to cause infection of the skin follicles and unsightliness noticed by all, whereas, with a well-kept shaven face, the fact that the patient shaves is known only to herself and her husband. One patient with particularly heavy hirsuties controlled her appearance extremely well by rubbing off the hair from time to time with the pith side of lemon peel.

Voice changes probably depend on the normal pitch of the patient's voice. They developed early in some and very late in others. The voice may be very deep and gruff or husky, or may crack and change like that of a pubescent boy. Patients sometimes commented on their inability to sing in the same register, which may drop an octave or so. This was rarely a source of dismay but is irreversible.

Enlargement of the clitoris was sometimes considerable although not invariable. The glans was often enlarged to 0·8–1·0 cm. in diameter, appeared congested, and protruded from the enlarged prepuce, whose sulcus contained smegma. The body of the clitoris was often 2–3 cm. long. Concomitant with this overgrowth of the clitoris there was increased vaginal secretion.

Acne developed only occasionally. The skin was more greasy in most of the patients in whom acne developed, and the acne then usually affected the face, chin, back, chest, and shoulders and probably depended partly on personal cleanliness.

All the above-mentioned virilising side-effects were seen with all the androgens used, occurring almost as much with methyl androstenediol as with testosterone and its esters. Although methyl androstenediol is said to be not so virilising, it certainly was so in the dosage of 100 mg. daily for a long time.

Increase of libido was an important side-effect (cf. Foss 1951); 14 patients (24·6%) admitted to a considerable increase of libido, but the actual incidence was probably higher. It may be associated with hypertrophy of the clitoris. Patients commented on constant irritability and sensitivity, but in some cases where examination revealed an enlarged clitoris an increase in libido was denied.

Results

Survival.—55·5% of the 106 patients were still alive 6 months after starting hormone treatment, 31·2% after 1 year, 11·6% after 2 years, 4·7% after 3 years and after 4 years, and 0·94% after 5 years. The average age of these 106 women at the beginning of therapy was 55 years and the mean survival for the group 48 weeks. The mean number of weeks lived in 5 years was 18·6% of the expected survival (Foss 1955). After the percentage expectancy of life in 5 years had been calculated for each case, statistical analysis gave the following results:

Group	*Age (yr.)*	*No. of patients*	*% expectancy*	*S.D.*
1	40 or less	9	9·42	±3·6
2	41–60	61	16·3	±2·1
3	61 or more	36	24·5	±4·45

The differences between groups 1 and 2, and between groups 2 and 3 were not significant, but between groups 1 and 3 the expectancy of life was so increased as to be outside the range of random chance. If the survival figures from the onset of symptoms are used instead of from the start of hormone treatment, we find that the average age at onset of symptoms was 51·2 (range 26–76), and the average survival 58·5 months (range 10 months–27 years. Dividing the patients into age-groups we get:

Group	*Age (yr.)*	*No. of patients*	*Average age at onset (yr.)*	*Survival (wk.)*	*5 yr. % expected survival*
1	Up to 40	18	35·5	230	88·8%
2	41–60	66	50·5	255	98·8%
3	61+	22	66·5	173	68·6%

These figures indicate that the prognosis in women aged more than 60 at onset was worse than in younger women: 97·3% of the patients were still alive after 6 months from the onset of symptoms, 87·8% after 1 year, 62·2% after 2 years, 46·0% after 3 years, 34·0% after 4 years, 26·4% after 5 years, 5·6% after 10 years, and 2·8% after 15 years.

Improvement was observed in 31 patients (29%): 1 aged less than 40, 19 aged 41–60, and 11 aged 61 or more. In 13 of the 14 women treated with œstrogen the first symptom had started after the menopause. Œstrogen therapy was started 4–27 years (mean 15 years) after the onset of the menopause. 7 of these patients had not undergone operation, because the cancer was too advanced when they were first seen. The average age of the 14 women was 63, and their average survival was 32 months: a woman on 0·3 mg. q.i.d. survived 59 months with quiescent bone metastases; another on 0·3 mg. q.i.d. survived 29½ months with temporary regression of soft-tissue metastases; a woman on 5·0 mg. q.i.d. or more survived 17 months with quiescent bone metastases; and 11 women on 5·0 mg. q.i.d. or more survived 31·7 months (mean) with good regression of soft-tissue metastases.

Only 17 patients (30%) of those treated with androgens showed some improvement; their average age was 49 and average survival 17·25 months. Of these 17 women 14 (82%) had their first symptom before the menopause (1 underwent hysterectomy 11 years before the first symptom), and 4 had had neither surgery nor radiotherapy. The results of treatment were as follows:

	No. of patients
Skin deposits regressed	7
Lymph-nodes regressed	6
Bone healing and recalcification	4
Abdominal secondaries regressed	2
Lung metastases regressed	2
Loss of pain and subjective improvement but no change in secondaries	3

The different types of metastases responded as follows:

Type	*No. of patients*	*No. improved*	*With œstrogen*	*With androgen*
Skin	74	17	10	7
Lymph-glands	79	13	7	6
Bone	55	4	..	4
Lungs and pleura	35	3	1	2

Of the 55 patients with bone metastases 35 were treated with androgens, and of 31 complaining of severe pain 11 were relieved, including the 4 showing improvement radiographically. 6 patients had pathological fractures (4 during treatment) in which there had been no clinical improvement. In one the fractures were present on starting androgen treatment and subsequently healed: in another a fracture occurred during the early phase of treatment but later healed, together with radiographic improvement in the other bone metastases. After œstrogen treatment none of the remaining 20 patients who had bone metastases showed clinical or radiographic improvement, and pathological fractures occurred in 4 during the course of therapy.

In addition, less objective evidence of improvement was obtained by assessing the effect of treatment on the following:

(1) Pain or distress, which occurred in 80 patients, 20 of whom obtained relief.

(2) Serial hæmoglobin levels. Before the start of treatment anæmia was found in 49 patients, 24 of whom had radiographically proved bone metastases. There was virtually no improvement with treatment.

(3) The E.S.R. was raised initially in 68 patients and fell during treatment in 17.

(4) The body-weight increased in 23 (13 given androgen, 10 given œstrogen), decreased in 53, and did not change in 30.

(5) Blood-alkaline phosphatase: no definite correlation was found between clinical improvement or extension or regression of bone metastases judged by radiographic appearances. In one or two cases with bone secondaries which improved with testosterone, where the initial pre-treatment levels were high, subsequent values were much reduced. On the other hand, some cases treated with œstrogen showed similar changes in phosphatase with progressive deterioration in osseous metastases.

Discussion

A therapeutic trial of this kind can only help to assess the effect of alteration of the steroid hormone balance of the host and makes no allowance for the specific malignancy of the cancer. Unfortunately the complete Broders's grading of each case was unknown. In a few cases no details of the histology were available and many years had elapsed since the original operation.

In the preliminary trials it soon became apparent that only the old postmenopausal women with soft-tissue metastases might benefit.

The survival of any one patient with breast cancer of this advanced stage of severity must obviously depend on numerous factors—the patient's age, the distribution and type of metastases, the grade of malignancy, the hormone dependence (whether of œstrogens or possibly of pituitary hormone), and other general health factors.

Spontaneous regression has been reported by Gordon Taylor, but malignancy may lie dormant for years. In the present series, however, the 106 patients had very advanced stage-IV metastases. Even so, some patients were in reasonable general condition, whereas others were almost moribund. No cases were selected except that those with clinical evidence of considerable liver metastases were excluded.

Comparison is necessary with the survival of patients with untreated advanced mammary cancer:

Wade (1946) reported 27 untreated patients with breast cancer of whom 24 were in stage III. The average duration of life was 8 months from first being seen, and all were dead in 2 years.

Greenwood (1926) found a mean survival of 38·3 months from the onset of symptoms in 651 cases; Wyard (1925) found the mean duration of life to be 37 months in 311 cases; and Daland (1927) quotes 40·5 months in 100 cases. Wade has collected these numbers together and found that the average duration of life in untreated cases was 38·55 months in 777 patients, and that the duration of life increased from the age-group 25–34 to that of 65–74 and then decreased again.

According to Wade (1946) X-irradiation alone or together with surgery raised the survival time by 21·5% at one year, 22·5% at 2 years, 10% at 3 years, 10·5% at 4 years, and 9·5% at 5 years over the survival-rates of untreated cases. In her series the mean survival of 27 patients with advanced stage-III untreated cancer when first seen was only 8 months; hence 12 months' survival in the present series of advanced stage-IV cancer after treatment with hormones is possibly significant. All her patients had died in 2 years, whereas 11·6% of the present series were alive at 2 years and 4·7% at 4 years.

As regards surgical treatment alone, Lewison et al. (1953) claim a 5-year survival-rate of 43·2%, regardless of the type of operation. These were presumably selected cases, inoperable stage-IV cancer being almost certainly excluded.

In the present series most of the patients had received standard surgical and X-ray treatment in addition to hormones, and the mean duration of life was 58·5 months from the first symptom. There was a 5-year survival-rate of 26·4% from onset. Although superficially this compares unfavourably, it must be remembered that my series consists solely of stage-IV advanced cancer.

The age at onset seems to influence duration of life. In patients who developed cancer of the breast when over 60 the percentage expected survival in 5 years was 20% less than in patients aged less than 40, and 30% less than in patients aged 41–60. A similar prognosis was reported by Burdick and Chanatry (1954).

In the present series of advanced stage-IV cancer the percentage expectancy of life in 5 years was significantly greater after hormone treatment in the patients aged

more than 60 than in the younger patients. Although breast cancer is more rapidly fatal if it begins at the age of more than 60, there is more chance of prolonging survival in this age-group by hormone therapy when metastases are widespread.

Assessment of improvement was made as objective as possible. Temporary regression of metastases in glands, photographically recorded improvement in skin lesions, and radiographic evidence of bone healing were accepted as beneficial effects of hormone therapy. 5 cases were regarded as improved, because pain of bone secondaries was diminished, although no radiographic improvement was seen during long periods of survival in moderate health. Only 4 of 35 patients with bone secondaries treated with androgen showed radiographic evidence of bone healing. This figure of 11% compares unfavourably with 30% claimed by Hallberg et al. (1953), who also claim improvement in general condition and palliation in 85%. In the present series objective improvement was seen in 30% of those treated with androgen—a very similar figure to 27% found in a shorter observation period by Segaloff et al. (1951) in 48 cases treated with testosterone propionate 100 mg. thrice weekly.

Subjective improvement was noted in a few other patients in this series treated with androgens, but it was doubtless partly due to the anabolic effect—increased appetite and temporary euphoria.

For some old patients who present with fungating lesions too advanced for surgery or X-irradiation œstrogens are a useful means of palliation. Healing of ulceration in some cases may last months.

Huseby (1954), who treated with œstrogens 100 patients with advanced mammary cancer, reported that those in whom the response was favourable had an average survival of 29 months from the start of therapy, and that 24 of these were more than 5 years past the menopause (natural or therapeutic). The response of those with bone lesions was poor. Only 1 of his 5 patients who had not reached the menopause improved. There was major regression of pulmonary metastases in 11. These figures are similar to my finding in 14 patients who improved with œstrogens. Their average age was 63 (range 53–76) and average survival 32 months from the start of therapy.

The considerable virilisation caused by big dosages of androgens is perhaps not so very important. Shaving with an electric razor will maintain a presentable appearance. Methyl androstenediol, which is claimed to be less virilising, has nothing to recommend it over testosterone. Patients treated with 100 mg. of methyl androstenediol daily for some months developed almost as much hirsutism as those given testosterone esters; moreover methyl androstenediol causes pain when it is given in crystalline suspension, and in several cases it caused an abscess at the site of injection. Segaloff et al. (1952) observed similar results and achieved regression of the lesions in only 2 of 24 cases treated solely with methyl androstenediol.

The choice of therapy was not dictated at first by a knowledge of œstrogen dependence of a particular cancer. Usually old postmenopausal women with soft-tissue metastases were treated with œstrogens, and the younger patients or those with widespread bone metastases were given androgens. Subsequent analysis of the 17 patients who responded to androgens, however, showed that 82% had had their first symptom of cancer before the menopause, whereas of the 14 who improved with œstrogens 93% had had their first symptom after the menopause. This may possibly be a guide to selection for hormone therapy, and in the androgen-treated group with premenopausal onset this may indirectly indicate œstrogen dependence; or, conversely, the postmenopausal onset suggests that not even stroma-cell œstrogens were responsible stimulants to their cancer (Sommers et al. 1953). In these old patients, in whom pituitary activity is not inhibited by endogenous œstrogens, there may be excessive production of somatotrophin and prolactin as well as gonadotrophin, and the beneficial effect of œstrogen therapy may be due to inhibition of these hormones.

It is quite clear that there is a type of patient with breast carcinoma which is temporarily responsive to treatment with androgens or by oöphorectomy or by adrenalectomy, and that the essential common factor is œstrogen dependence (Pearson et al. 1954). Unfortunately there is no way of detecting œstrogen dependence, and only recently have chemical methods of estimating œstrogens in urine been elaborated, but the method is laborious (Brown 1955) and is not yet readily adaptable to clinical use.

In the present series the patients were so widely riddled with metastases that one could not hope for much benefit; hence an improvement-rate of about 30% for both œstrogens and androgens is possibly satisfactory.

As Asher (1955) aptly remarked: "Prolongation of life is not the only aim of treatment; it should be a tolerable life. It is better to be wholly alive for one month than half alive for two." The latter part of his statement referred to cases after endocrine surgery, which, like hormone therapy at present, suffers from an inability to discriminate between cancer cases with and without hormone dependence.

In the present series the side-effects and possible upsets and the prolonged course of oft repeated intramuscular injections were a high price to pay by patients for no improvement; perhaps it would have been better if they had been allowed to spend their remaining life under increasing doses of morphine. So much, however, depends on each patient's temperament. One can only remember the gratitude and faith of those who were fortunate in their response to treatment, some of whom enjoyed many months' freedom from pain and freedom from odour, and lived reasonably normal lives. Such results, even though restricted to about a third of those treated, are worth while.

Summary

106 women with stage-IV mammary carcinoma were treated with either androgen or œstrogen and kept under observation until death.

Improvement was observed in only 29% of cases. Of the 17 women who improved with androgen 14 had had their first symptom before the menopause; and of 14 patients who improved with œstrogen 13 had had their first symptom after the menopause.

The average age of those patients who received benefit from œstrogen was 63 and from androgen 49. The prognosis was better for the older patients treated with œstrogen, the average survival for these being 32 months, compared with 17·25 months for those who improved with androgen.

The possible significance of œstrogen dependence in the younger group and pituitary-hormone dependence in the older postmenopausal patients is discussed.

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References overleaf

SERUM-CHOLINESTERASE LEVELS IN DIABETES MELLITUS

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IN 1937 Antopol et al. briefly reported that the plasma-cholinesterase level was raised in diabetes mellitus—an observation which was confirmed by Faber (1943) and by Cristol et al. (1946). Each of these reports, however, described only a small series of diabetic patients, and no details were given of the age of the patients, or the type or severity of the diabetes.

Saviano et al. (1948) reported raised plasma-cholinesterase levels in dogs with alloxan diabetes. Berry et al. (1954), however, found a strong correlation between the amount of surface fat and the plasma-cholinesterase level in a group of 345 men from three districts in England, and suggested that the high cholinesterase values found in diabetes mellitus might be related, not to the diabetic state per se, but to the obesity which often accompanies it.

We therefore determined the serum-cholinesterase levels in a series of diabetic patients and recorded whether these patients were "obese" or "non-obese." The severity of the diabetes and the adequacy of the control by insulin were assessed. Serum-cholinesterase levels were also determined in a series of obese non-diabetic patients attending hospital for other reasons.

Method

Blood was drawn from the antecubital veins of 50 adult patients with diabetes mellitus (25 of them obese and 25 non-obese), 25 adult obese non-diabetic patients, and 33 non-obese healthy adults.

In most cases, blood was taken in the afternoon; a study of 2 healthy subjects showed that there was no significant difference between the fasting serum-cholinesterase level and the levels at one, two, three, and four hours after a meal containing 60 g. of fat.

The diabetics were all outpatients under treatment, and the diagnosis had been confirmed by blood-sugar estimations. The degree of control of the diabetes was assessed by the amount of glycosuria, determined by daily urine-testing ('Clinitest') and interpreted as follows:

Degree of control	*Results of urine tests*
Good	.. Never more than blue or green throughout the twenty-four hours.
Fair	.. Usually green, occasionally tan colour.
Bad	.. Frequently tan colour.

The severity of the diabetes was assessed by the dose of insulin required to establish control, but we realised that this was only a very limited method of assessment.

The presence of obesity was established on clinical grounds, bearing in mind the patient's height, weight, build, and amount of subcutaneous fat.

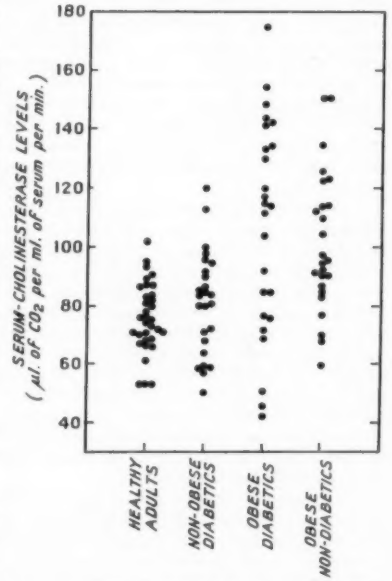
As it was not our aim to discover a precise correlation between plasma-cholinesterase levels and small variations in the degree of obesity, we decided that this classification was adequate for the purpose of the investigation, and we did not attempt a more accurate assessment of the amount of subcutaneous fat, such as measuring the thickness of the subcutaneous tissue fold (Edwards 1950).

All but 4 of the obese non-diabetic patients were attending hospital on account of their obesity. In the remaining 4, the obesity was coincidental.

Estimation of Cholinesterase

Cholinesterase activity was estimated manometrically on a sample of the separated serum by a modification of the method of Ammon (1933).

The free acid released from the choline ester by the action of the cholinesterase liberates carbon dioxide from the 0·025 *M* sodium bicarbonate medium; acetylcholine perchlorate (0·015 *M*) was used as substrate. Measurements were done in duplicate and were corrected for non-enzymic hydrolysis of the substrate. These enzyme measurements were made by one of us (R. H. S. T.), who at the time was unaware of the patient's clinical state, but in every case serum either from a healthy person or from a non-obese diabetic, and serum from an obese diabetic or an obese non-diabetic patient, were assayed simultaneously. Cholinesterase activity was expressed as µl. of carbon dioxide per ml. of serum per minute.



Serum-cholinesterase levels in four groups of adults.

Results

The serum-cholinesterase levels found in these 4 groups of subjects are shown in the accompanying figure, and the mean values and the standard errors of the means are listed in the accompanying table. The levels in the healthy adults varied from 53 to 102 µl. of carbon dioxide per ml. of serum per minute. Of the 25 obese

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MEAN SERUM-CHOLINESTERASE LEVELS IN FOUR GROUPS OF ADULTS

Group	No. of subjects	Mean activity (µl. of CO_2 per ml. serum per min.)	Standard error of mean	Range
Healthy adults ..	33	76	±2	53–102
Non-obese diabetics ..	25	81	±3	51–120
Obese diabetics ..	25	107	±7	43–175
Obese non-diabetics ..	25	102	±5	60–151

diabetics, 15 (60%) gave values above this range, varying from 108 to 175 µl; 9 of them (36% of the whole group) gave values over 120 µl. The mean value obtained in the 25 obese non-diabetic patients, as in the obese diabetics, was significantly higher than that found in the healthy adults, 11 of them (44%) having values ranging from 105 to 151 µl. On the other hand, of the 25 non-obese diabetics 23 (92%) had levels within the normal range, and no levels were above 120 µl.

Statistical analysis of these results shows that, although 2 of the non-obese diabetics gave values above the highest found in the present normal series, there was no statistical difference between the levels in the non-obese diabetics and those in the healthy adults. On the other hand, the difference between the levels in the non-obese and the obese diabetics is highly significant, as is also the difference between those in the obese non-diabetics and the healthy adults.

No significant correlation was found between the serum-cholinesterase levels in the diabetic group and the severity or degree of control of the diabetes.

Discussion

Although the serum-cholinesterase level in children is significantly higher than in adults (McArdle 1940), Callaway et al. (1951) reported that age does not influence the level in adults. Many workers have also shown that the plasma-cholinesterase level does not significantly differ between the two sexes. The patients studied in the present series were all over the age of 18, and the mean serum-cholinesterase level of 76 µl. of carbon dioxide per ml. of serum per minute found in our healthy adults agrees with the average normal values of 78, 65, and 79 µl. found by McArdle (1940), Kunkel and Ward (1947), and Hutchinson et al. (1951) respectively. The results we obtained in diabetics indicate that high serum-cholinesterase levels are found only in patients who are also overweight, and they suggest that the high levels are associated with the accompanying obesity, rather than with the diabetic state itself; this accords with the finding by Berry et al. (1954) of a positive correlation between the amount of surface fat and the plasma-cholinesterase level.

The influence of diet on plasma-cholinesterase activity in man was first studied by McCance et al. (1948), who reported a reduction in the serum-cholinesterase level in undernourished Germans (see also Hutchinson et al. 1951). Waterlow (1950) found very low plasma-cholinesterase levels in 20 malnourished African infants. In 2 of them he measured liver-cholinesterase activity in aspiration-biopsy specimens. In both the initial liver-cholinesterase level was low compared with that in 4 controls, but it was more than doubled after the infants were fed for four to five weeks on a high-milk diet. Hutchinson et al. also found that a rise in the plasma-cholinesterase level was brought about by improvement of the diet.

There is now good evidence that the plasma-cholinesterase is, in the main, derived from the liver. McArdle (1940) demonstrated that the serum-cholinesterase level is lowered in patients with liver disease and that improvement in liver function was accompanied by a rise in the serum-cholinesterase level.

Brauer and Root (1946) further showed that, in rats with liver injury induced by intraperitoneal injections of carbon tetrachloride, both the plasma and liver cholinesterase levels were reduced; after ten days' injections, the reduction was more pronounced in the liver.

The cholinesterase activity of human plasma is predominantly due to "pseudocholinesterase" (Mendel et al. 1943), an enzyme differing in many respects from the "true" cholinesterase present in nerve and muscle tissue, whose physiological function is presumed to be the inactivation of acetylcholine released at certain nerve-endings. The function of pseudocholinesterase is at present obscure, but the above observations raise the question as to whether in plasma, and therefore also in the liver, pseudocholinesterase may not be concerned with some aspect of fat metabolism, rather than with inactivating acetylcholine. It is known that the pseudocholinesterase level in the plasma can be reduced almost to zero without signs of acetylcholine accumulation developing (Mazur and Bodansky 1946, Hawkins and Gunter 1946). It is also known that pseudocholinesterase hydrolyses various non-choline esters, and Adams and Whittaker (1949) showed that it is responsible for about 90% of the hydrolysis of tributyrin by human plasma.

Further evidence suggesting a connection between pseudocholinesterase and fat metabolism was afforded by Hawkins and Nishikawara (1951), who showed that in male rats the ingestion of a hypolipotropic diet led to a considerable rise in pseudocholinesterase activity in both the plasma and the liver; the subsequent addition of lipotropic agents, such as choline or methionine, to the deficient diet restored the elevated plasma-pseudocholinesterase level to normal. In the rat, the plasma contains, in addition to pseudocholinesterase, an active true cholinesterase and also an eserine-resistant tributyrin-hydrolysing enzyme; neither of these enzymes is affected by giving hypolipotropic diets. It is also of interest that Kunkel and Ward (1947) found that the plasma-pseudocholinesterase level is higher than normal in patients with the nephrotic syndrome, the average in the 10 patients studied being 110 µl. of carbon dioxide per ml. of serum per minute.

On the other hand, denervation experiments and the use of selective inhibitors tend to show that in certain other tissues, pseudocholinesterase, like true cholinesterase, may play some part in cell excitation. Supporting evidence for this has been obtained from experiments on the central artery of the rabbit's ear (Armin et al. 1953), cat ileum (Koelle et al. 1950), cat skin (Hellmann 1952), cat iris (Burn and Philpot 1953), dog heart (Burn and Walker 1954), and cat brain (Desmedt and La Grutta 1955).

It is possible therefore, that, owing to the overlapping substrate specificity shown by many of the esterases, the term "pseudocholinesterase" is being used to denote different enzymes with fundamentally different physiological properties, and that the pseudocholinesterase in human plasma and liver may be very different from that in the nervous system, the myocardium, the blood-vessels, or the intestinal wall.

Summary

The serum-cholinesterase level was determined in 50 adult patients with diabetes mellitus (25 obese and 25 non-obese), 25 adult obese non-diabetics, and 33 healthy non-obese adults.

High serum-cholinesterase levels were found only in those diabetic patients who were also overweight, suggesting that elevation of the serum-cholinesterase level is associated with the accompanying obesity, rather than with the diabetes itself.

The possibility is discussed that this pseudocholinesterase, present in human plasma and liver, may be concerned with some aspect of fat metabolism.

We wish to thank the Medical Research Council for a grant towards the expenses of this work. Our thanks are also due

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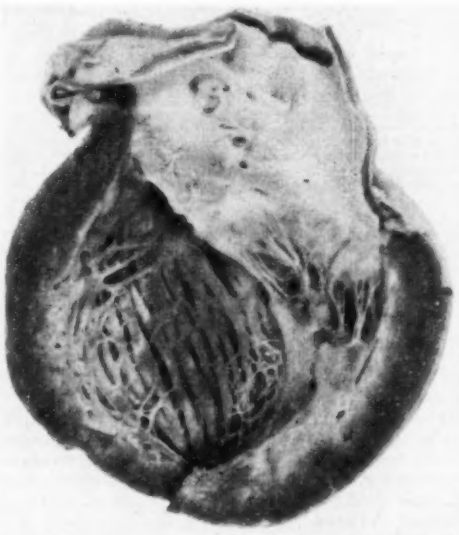

Fig. 1—Left ventricle showing endomyocardial sclerosis (× 0·8).

PERIARTERITIS NODOSA

ITS RELATIONSHIP TO ENDOMYOCARDIAL SCLEROSIS

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IN periarteritis nodosa the heart is often involved, being second only to the kidney as the commonest organ affected. Thus, Arkin (1930) states that it is affected in 70% of cases, and Harris et al. (1939), from an analysis of the post-mortem findings in 87 cases of periarteritis nodosa, give a figure of 84%. In the varied clinical picture there are often symptoms and signs of cardiac disorder (tachycardia, dyspnœa, and œdema) and not uncommonly the end of the disease is congestive failure.

Recently, cases presenting clinically as congestive cardiac failure of obscure origin have been described in which the principal finding at necropsy is a sclerosis of the endocardium and subjacent myocardium. Several large series have been reported from Africa (Bedford and Konstam 1946, Ball et al. 1954). Indeed, Davies and Ball (1955) state that endomyocardial fibrosis in their experience is the second commonest cause of heart-failure in adult Africans. The condition outside Africa is rare and, in the main, only isolated case-reports have appeared. A similar, though probably distinct, morphological picture is also seen in infancy. First described as fœtal endocarditis, it is now most generally known as fibroelastosis of the endocardium (Weinberg and Himmelfarb 1943).

The interest of the following case lies in the occurrence of periarteritis nodosa in a boy aged 12 in whom endomyocardial sclerosis was a cardinal post-mortem feature.

Case-report

A boy aged 12 had mid-abdominal pain on the evening of July 3, 1955. He was seen by his general practitioner who prescribed a mild laxative. On the following morning, his parents were shocked to find him dead.

He was the fifth of ten children, and weighed 9½ lb. at birth. During the pregnancy, there had been no maternal illnesses, and in particular no history of rubella, influenza, or bronchitis. At 1 year he was inoculated against diphtheria and re-inoculated at the age of 9 but received no vaccination against smallpox. During the first two years of life he had several attacks of bronchitis. At 3 years he had pneumonia and was treated in hospital with sulphonamides. At 4 to 5 years he had measles, whooping-cough, and mumps, and on one occasion was treated for threadworm infestation. His development was normal until the age of 3; thereafter growth was retarded and at 12 years he was the same height as his 6-year-old twin sisters—i.e., 3 ft. 9½ in. (average height at 12 years is approximately 5 feet). He had a bright alert mentality, and led a normal active life, with full participation in games at school and never had any symptoms or signs of heart-disease. There was no history of rheumatic fever, asthma, or skin disease.

On March 18, 1955, he was admitted to hospital because he had had pain in the region of the left loin for 24 hours. This was accompanied by dysuria. He was toxic, the tongue was heavily coated, and the temperature was 100°F. Otherwise physical examination was negative. In particular, there was no swelling or tenderness in the left loin, and the kidneys were not palpable. Intravenous pyelography and cystography showed no abnormality apart from bifid pelves. A chest radiograph showed no evidence of any focal lung lesion but there was a doubtful increase in the transverse diameter of the heart. The urine was normal. A presumptive diagnosis of a left perinephric abscess was made and he was treated with penicillin 250,000 units and streptomycin 250 mg., both six-hourly. Progress was satisfactory, and he was discharged from hospital on April 12, 1955. Subsequently he led a normal life without further symptoms until his sudden death in July.

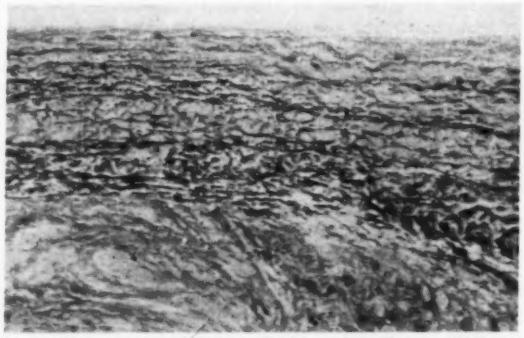

Fig. 2—Fibroelastic thickening of the endocardium. (Weigert-van Gieson stain. × 140.)

Necropsy Findings

The significant findings other than those in the heart were: small stature; slight œdema of the lung; ante-mortem thrombus filling the lumen of the splenic artery throughout its course; old infarctions of the spleen; thrombosis of the superior mesenteric artery with acute infarction of the lower half of the jejunum, ileum, cæcum, and part of the ascending colon, accompanied by early peritonitis.

The *heart* weighed 130 g. All chambers were dilated and there was definite hypertrophy of the left ventricle. The striking feature was the diffuse whitening of the endocardium and inner third of the myocardium of the left ventricle (fig. 1). This was seen mainly on the anterior and lateral walls in the apical half of the ventricle, but it extended upwards on the posterior wall behind the mitral cusp. The interventricular septum, except towards the apex, was unaffected. There was no mural thrombus. The aortic valve, the mitral cusps, and their chordæ tendinæ were normal, but the papillary muscles, both anterior and posterior, were fibrosed. The endocardium lining the left auricle was distinctly thickened. The foramen ovale was completely sealed off. On the right side of the heart the endocardium and valves were normal but the right ventricle showed slight hypertrophy. The coronary arteries showed no abnormality. The pericardium and aorta were normal.

Microscopy

Numerous sections of the heart showed focal fibrosis of the myocardium of the left ventricle. The inner third was

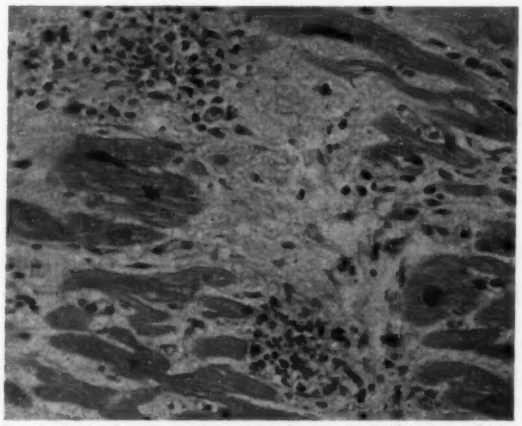

Fig. 3—Foci of polymorphonuclear leucocytic infiltration of the myocardium (× 250).

extensively involved, but the outer two-thirds showed only slight damage. Elastic-tissue stains revealed fibroelastic thickening of the endocardium in the scarred area of the left ventricle (fig. 2). In several places it was impossible to differentiate the endocardium clearly, owing to the fibroelastic change affecting both the endocardium and the subjacent myocardium. The thickening, in general, was of mild degree. The endocardium over the interventricular septum and in the right ventricle was normal. In addition to the focal fibrous scars in the myocardium, there were numerous congested capillaries, occasional small areas of round-cell infiltration, mainly lymphocytic, and also several foci of acute cellular infiltration including eosinophil polymorphonuclear leucocytes (fig. 3). The myocardium in general was hypertrophied but there was some atrophy of the fibres immediately surrounding the scarred areas. A few small foci of necrosis of the myocardium were present. There was no evidence of rheumatic fever, and in particular there were no Aschoff nodes. The acute lesions of periarteritis nodosa were not seen in the coronary arteries or arterioles. In a very occasional small artery in the subendocardial fibrous scars, however, a fairly marked fibroelastic thickening of the subintimal tissues was observed (fig. 4). The pericardium showed a slight perivascular round-cell infiltration.

The typical lesions of acute periarteritis nodosa were found in the superior mesenteric artery at the site of the thrombus formation. Similar acute lesions were present in the vasa vasorum of the aorta, and in the vessels of the pancreas

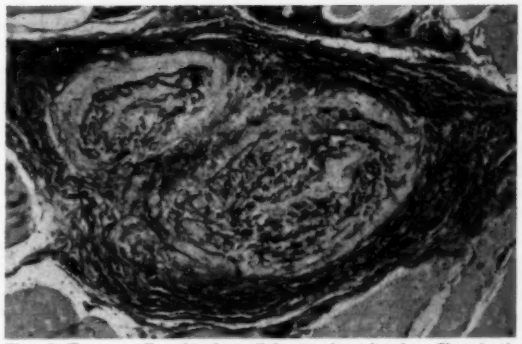

Fig. 4—Two small subendocardial arteries showing fibroelastic thickening of the wall (× 140).

(fig. 5) and testes. Lesions in the healing phase with granulation-tissue formation were seen in the wall of the splenic artery. There was no evidence of periarteritis nodosa in the kidneys or in the liver. The cellular infiltrate in relation to the acute vascular lesions was similar to that in the heart—i.e., lymphocytes, plasma-cells, and polymorphonuclear leucocytes, including eosinophils. There were no other significant histological findings.

Comment

The sudden death was considered to be of cardiac origin and despite the age of the patient a tentative diagnosis of congenital fibroelastosis of the heart was made. The clinical history of stunted growth since the age of 3 supported a congenital cardiac lesion. The terminal illness with mid-abdominal pain was explained by the superior mesenteric artery thrombosis with acute intestinal infarction. The pre-terminal illness with pain in the left abdomen was attributed to arterial thrombosis and infarction of the spleen. These infarcts were several weeks old. At the time of the necropsy the cause of the thrombosis in the superior mesenteric and splenic arteries was difficult to account for in the absence of any evident source of emboli. Subsequent histological examination of these vessels disclosed the typical features of acute periarteritis nodosa. The administration of sulphonamides, certainly on one occasion and possibly more than one, is of interest in view of these findings (Rich 1942).

Discussion

In congenital fibroelastosis of the endocardium, there is a typical macroscopic picture. The endocardium is pearly white throughout one or both ventricles, usually the left; and this appearance was the striking post-mortem feature in this case. But there are several findings not in accord with congenital fibroelastosis. The

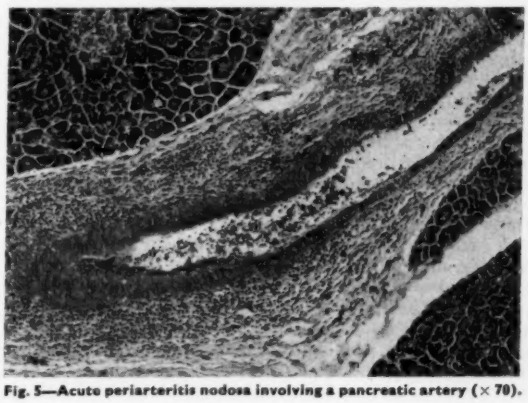

Fig. 5—Acute periarteritis nodosa involving a pancreatic artery (× 70).

first is the boy's age. Most of those who have studied this subject think that congenital fibroelastosis is a disease of infancy and that it is a separate and distinct entity from the condition of adults which presents a similar macroscopic appearance. Nevertheless, congenital fibroelastosis has been described in children at 6 and 11 years of age (Dennis et al. 1953), and Thomas et al. (1954), reporting cases at varying ages up to 70, thought that congenital fibroelastosis may persist into adult life. The second discrepancy is the distribution of the endomyocardial sclerosis. In particular, in this case the endomyocardium of the interventricular septum below the aortic valve was normal. Thirdly, the degree of fibroelastosis of the endocardium was rather less than that is usually seen in the congenital type, and in contrast, the myocardial fibrosis was much more striking in the subendocardial region. Therefore, despite the similarity of the morphological appearances, we do not consider this case to be one of congenital fibroelastosis persisting into late childhood.

In endomyocardial fibrosis as described in adult Africans, the lesion is a gross one with the endocardium showing varying grades of thickening of 3 or 4 mm., or even more, in depth, with definite subjacent myocardial fibrosis. Of particular interest are those cases in adults outside Africa which have been described by various authors, including Loeffler (1936), Comeau (1937), Becker et al. (1953), and Thomas et al. (1954). The degree of endomyocardial sclerosis in these cases was variable, but in general it was intermediate between the congenital and African groups. The case we describe is in our opinion an early example of endomyocardial sclerosis of this type. The age of the patient, and the lack of any symptoms or signs referable to a cardiac disorder would accord with an early lesion.

Macroscopically the heart in periarteritis nodosa may show the characteristic picture of aneurysmal dilatations of the coronary arteries, often described as "beading." In the absence of this finding there are no specific naked-eye features either in the myocardium or in the mural endocardium. There is commonly some hypertrophy of one or both ventricles, usually the left. The appearances on section of the myocardium are usually normal, but varying degrees of myocardial damage from acute necrosis to fibrosis, diffuse or focal in distribution, may be seen. We have not found, however, any macroscopic description corresponding to the picture in this boy, where the myocardial damage showed a striking localisation to the subendocardial zone. Histologically, in periarteritis nodosa, the only characteristic findings are the typical vascular lesions, and in their absence the picture is a non-specific one, such as is found in "isolated myocarditis" whatever the cause. The myocardium shows diffuse or circumscribed lesions mainly of the interstitial tissues but also affecting the muscle-fibres. There is no characteristic predominant cell type, lymphocytes, polymorphonuclear leucocytes, and eosinophils being found on occasion. All transitions from acute inflammatory cellular exudate and necrosis to scar-tissue formation are found even in the same heart. This variable appearance is exemplified in the case we record here.

From the standpoint of pathogenesis, the case has some bearing upon the problem of endomyocardial fibrosis. It is beyond the scope of this article to review the various hypotheses of ætiology in adult endomyocardial fibrosis—malnutrition (Gillanders 1951), vitamin-B deficiency (Smith and Furth 1943), an allergic phenomenon (Loeffler 1936), or a collagenosis (Hill and Reilly 1951, Becker et al. 1953).

Loeffler (1936), under the title "endocarditis parietalis fibroplastica with eosinophilia," described a case in which sclerosis of the endocardium with overlying thrombus was the chief pathological finding in a patient who died in congestive cardiac failure. Since then several authors have reported single cases (Mumme 1940, Büchler 1941-42, Egger 1944, and others). A possible early case, the first in the British literature, was described by Lennox (1948). What was considered to be the first case in the American literature was recently reported by Hoffman et al. (1955). This syndrome of parietal endocarditis with eosinophilia is considered by Loeffler to have an allergic basis. Lennox (1948) points out that in favour of this theory his case was one of status asthmaticus, Büchler's case had a severe urticarial skin rash, and Egger's rheumatoid arthritis, and all had an eosinophilia. In a case of this syndrome described by Roulet (1944), there were lesions suggestive of an allergic polyarteritis in the splenic arterioles and venules.

In current opinion, periarteritis nodosa is probably an allergic or hyperergic response to some infection or toxic agent. The occurrence of early endomyocardial sclerosis in association with periarteritis nodosa of the splanchnic vessels is of interest, not only for its rarity, but also for the support it lends to Loeffler's hypothesis.

Summary

The association of endomyocardial sclerosis and periarteritis nodosa is reported, and the pathogenic significance briefly discussed in relation to Loeffler's "endocarditis parietalis fibroplastica."

We thank Mr. F. Beckwith, of the Pathology Department, University of Liverpool, for the photographs.

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EPIDEMIOLOGY OF HYPEREMESIS GRAVIDARUM

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MANY obstetricians consider that hyperemesis gravidarum was less common and less severe during the years of the 1939–45 war, but this impression has not been confirmed statistically. Such a change in incidence and severity might help to confirm the clinical impression that psychological factors are important in the ætiology of this condition, and I therefore studied hyperemesis gravidarum in North-east Scotland in the years 1938–53.

Material

Between 1938 and 1953 674 patients with vomiting were admitted to the Aberdeen Maternity Hospital as booked cases or emergencies. 453 showed the characteristic picture of hyperemesis gravidarum, 91 had late vomiting of pregnancy of unknown origin, and in 130 the vomiting was associated with the conditions listed in table I, urinary-tract infections being the most common.

TABLE I—PATIENTS WITH DISORDERS GIVING RISE TO VOMITING IN PREGNANCY REQUIRING ADMISSION TO HOSPITAL, 1938–53

Disorder	No. of cases	Disorder	No. of cases
Pyelitis and urinary-tract infections	72	Breech presentation	2
Pre-eclampsia	7	Subarachnoid hæmorrhage	1
Diaphragmatic hiatus hernia	7	Hypertensive encephalopathy	1
Peptic ulcer	5	Cerebral thrombosis	1
Gastritis	7	Otitis media	1
Gastro-enteritis	1	Influenza	1
Appendicitis	2	Pneumonia	2
Cholecystitis	2	Bronchitis	2
Pylorospasm	1	Total	130
Intestinal obstruction	3		
Infective hepatitis	2		
Constipation	2		
Accidental antepartum hæmorrhage	5		
Degenerating fibroid	3		

Of the 453 patients with hyperemesis, 305 lived in Aberdeen; they were studied separately because it was possible to calculate the incidence of the condition in that city. The figures, of course, relate only to cases sufficiently severe to warrant admission to hospital; although many relatively mild cases were admitted, many more of similar severity may have been treated successfully at home, especially in the earlier years.

All maternal deaths from hyperemesis in North-east Scotland between 1931 and 1953 were also studied.

Results

INCIDENCE

Table II shows the average number of patients with hyperemesis admitted per year and the percentage of cases in which pregnancy was terminated.

These figures suggest that the condition became less common and less severe between 1940 and 1948, and this is confirmed by the data for Aberdeen in table III. In Aberdeen the rate of admissions fell sharply from 10 per 1000 births in 1938 to less than 3 per 1000 in 1940, and it remained low until 1949, when the pre-war level was almost regained; since then the rate has fluctuated between 6 and 10 per 1000 births.

Pregnancy was terminated in 7 cases (13·7%) in 1938–39, but in the five-year period 1940–45 only 3

TABLE II—PATIENTS ADMITTED TO HOSPITAL WITH HYPEREMESIS, BY YEARS

Years	Patients admitted with hyperemesis	
	Av. no. per year	Pregnancies terminated (%)
1938–39	33	12
1940–45	19	6
1946–48	25	8
1949–53	39	14

pregnancies were terminated (3·8%). Since 1949 the proportion of pregnancies terminated has risen again, but it is still a little lower than the pre-war rate. Over the whole period, the rate of admissions due to hyperemesis in booked cases was 7·7 per 1000 births in primigravidæ, and 9·9 in multigravidæ.

Age and parity did not appear to be important factors, but the condition was commonest in third to sixth pregnancies.

RESPONSE TO TREATMENT

The results are summarised in table IV.

Booked Cases.—In 67% of primigravidæ and in 60% of multigravidæ, simple measures led to rapid recovery, the remainder required more active treatment, including fluid replacement per rectum or intravenously.

2 of the 99 primigravidæ aborted spontaneously, and in 1 the pregnancy was terminated because of the persistence of severe vomiting. Of the 144 multigravidæ 1 aborted and in 4 pregnancy was terminated.

Emergency Cases.—Only 43% of primigravidæ and 34% of multigravidæ responded to simple measures; as in the booked cases, the multigravidæ were more ill and difficult to cure than the primigravidæ.

7 of the primigravidæ and 14 of the multigravidæ aborted spontaneously. Termination of pregnancy was necessary in 10% of the primigravidæ, and in 20% of the multigravidæ.

As table III shows, 11 out of 6221 pregnancies in Aberdeen in 1952–53 were terminated because of hyperemesis; 9 of these were in multiparæ.

MATERNAL DEATHS

Of the 453 women admitted to the Aberdeen Maternity Hospital because of hyperemesis in 1938–53, 5 died;

TABLE III—DATA ON ABERDEEN PATIENTS ADMITTED TO HOSPITAL WITH HYPEREMESIS GRAVIDARUM, 1938–53

Year	Total no. of deliveries in Aberdeen	Patients admitted with hyperemesis								
		Primigravidæ			Multigravidæ			Total	Rate per 1000 births	Percentage of pregnancies terminated
		No.	Active treatment	Pregnancy terminated	No.	Active treatment	Pregnancy terminated			
1938	3133	14	8	1	18	5	2	32	10·2	13·7
1939	3089	3	3	—	16	11	4	19	6·1	
1940	2918	2	—	—	6	2	—	8	2·7	3·8
1941	3003	6	1	1	8	3	—	14	4·6	
1942	2993	5	2	—	11	4	—	16	5·3	
1943	2972	4	—	—	12	2	1	16	5·3	
1944	3057	7	3	—	7	2	—	14	4·5	
1945	2901	5	1	—	6	5	1	11	3·7	
1946	3877	6	1	—	13	4	—	19	4·8	4·1
1947	4231	9	3	—	6	3	1	15	3·5	
1948	3696	7	4	—	7	3	1	14	3·8	
1949	3369	11	3	—	21	11	—	32	9·5	8·6
1950	3300	6	2	—	13	7	—	19	5·7	
1951	3094	9	1	—	13	3	—	22	7·1	
1952	3082	9	4	1	14	4	3	23	7·3	
1953	3139	10	3	1	21	10	6	31	9·8	
All years	51,854	113	39 (34·5%)	4	192	79 (40·1%)	19	305	5·8	7·7

but only 2 of the deaths were attributed to hyperemesis, the other 3 being due to difficult labour, pulmonary tuberculosis, and eclampsia.

The details of the 2 fatal cases of hyperemesis are as follows:

Case 1.—In 1938, a primigravida, aged 32, and 15 weeks pregnant, was admitted with a history of vomiting for 8 weeks. She was wasted, jaundiced, and dehydrated, and she had tachycardia and was mentally confused. Hysterotomy was performed after 7 days' treatment in hospital, but she died

TABLE IV—RESPONSE TO TREATMENT OF BOOKED AND EMERGENCY CASES ADMITTED WITH HYPEREMESIS GRAVIDARUM, 1938–53

Type of case	No. of cases	No. of patients recovered		No. of abortions		Maternal deaths	Stillbirths and neonatal deaths	No data on outcome
		Without active treatment	With intravenous and rectal fluid	Spontaneous	Induced			
Booked:								
Primigravidæ	99	67 (67·8%)	29	2	1	2	7	6
Multigravidæ	144	87 (60·4%)	50	1	4	1	7	3
Emergency:								
Primigravidæ	60	26 (43·3%)	27	7	6	2	7	28
Multigravidæ	150	52 (34·6%)	46	14	34	—	5	64

ten hours later. Necropsy showed typical lesions in liver and kidneys.

Case 2.—In 1942, a primigravida, aged 28, was admitted in a moribund condition after vomiting for 8 weeks. She had neuritis, paralysis of the limbs, and pneumonia. She died 13 hours later.

In the whole of North-east Scotland there were 14 maternal deaths due to hyperemesis between 1931 and 1940, 6 of them in residents of Aberdeen and 8 outside the city. There has been only 1 such death since (case 2).

The elimination of deaths from hyperemesis is probably the result of improved treatment. The records of the fatal cases before the 1939–45 war suggest that many patients with hyperemesis were very toxic when admitted to hospital, and that prolonged, inefficient treatment at home was largely responsible for this (cf. the present case 1). Nevertheless, comparison of cases admitted to hospital in 1938–39 with those admitted in 1952–53 showed no difference in distribution by stage of gestation, duration of vomiting before admission, or length of hospital treatment: no statistical evidence was found that in 1952–53 patients were sent to hospital sooner by their family doctors, nor did they require shorter treatment in hospital, than in 1938–39. Moreover, that serious forms of the disease still occurred in 1952–53 is shown by the fact that in that year many patients had to have their pregnancies terminated.

RELATION OF PARITY TO HYPEREMESIS GRAVIDARUM

Hyperemesis tends to recur in subsequent pregnancies. A third to a half of the multigravidæ admitted to hospital with hyperemesis in this series had been treated in hospital for the condition in previous pregnancies. Of 106 patients treated for hyperemesis in their second pregnancy, 50 had been treated for this condition in their first. Of 82 patients with hyperemesis in their third pregnancy 44 had had it in both, and 11 in 1 of the preceding pregnancies

Of the 159 primigravidæ admitted to hospital, details of subsequent pregnancies are known in 56 cases; of these, 27 were affected in their second pregnancy, and 7 out of 19 had hyperemesis in a third pregnancy.

Discussion

It is reasonable to suppose that the relatively low incidence and diminished severity of hyperemesis in Aberdeen and North-east Scotland in 1940–48 was experienced in other areas of Britain. Robertson (1946) cited Dieckmann as noting that hyperemesis was relatively rare in Germany in the 1914–18 war, and added: "The ætiology of this change in prevalence is complex, but it could be attributed to the different psychosocial environment prevailing in the war years contrasted with the post-war years, notably the separation of husband and wife during the years of combat."

The decrease in the incidence of hyperemesis is most unlikely to be related to food-rationing; improvement began abruptly in 1940, before war-time food policies had their greatest effect, and after the war the number of cases began to increase before there was any great mitigation of food-rationing.

Summary

In 1938–39 and in 1949–53 the incidence of hyperemesis gravidarum necessitating admission to hospital was 5–10 per 1000 births in the city of Aberdeen. The incidence and the severity of the disease were lower in the war and immediate post-war years.

Booked hospital patients required less treatment and less time in hospital than patients admitted as emergencies. The prognosis for the pregnancy was better in booked cases, and termination of pregnancy was required much less commonly in these than in emergency cases.

There were no maternal deaths from hyperemesis gravidarum in North-east Scotland between 1942 and 1953.

In many patients, the condition recurred in consecutive pregnancies.

I wish to thank Prof. Dugald Baird for his advice and criticism.

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PRIMARY SKIN CANCER OF THE FINGERS
SIMULATING CHRONIC INFECTION

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THE soft tissues of the fingers may be the site of a large variety of tumours, but malignant disease is somewhat rare. When it arises, the true nature of the lesion is frequently missed, and diagnosis often depends on whether the possibility is considered at all (Mason 1937). There are many references in published reports to the high proportion of false preoperative diagnoses (Mason 1929, 1937, Bickel et al. 1943, Clarke 1944), and published series often include cases where continued treatment as for a stubborn finger infection, including removal of pieces of nail and curettage of the nail-bed, was applied before the diagnosis became obvious.

Primary skin cancer of the fingers is usually a squamous-cell carcinoma or a malignant melanoma, and basal-cell carcinoma is relatively rare.

Clarke (1944) found only 18 basal-cell tumours on the hand and fingers in a series of 181 cancers of the extremities.

Squamous-cell carcinoma of the fingers, like carcinoma elsewhere on the hand, may arise in an area previously irritated chemically, by irradiation, or mechanically, or in a previously benign tumour. Often, it takes the form of a mass of exuberant granulations, slowly enlarging and involving the surrounding skin and covered with a seropurulent or sanguinous secretion which rapidly becomes malodorous from necrosis or infection with saprophytic organisms. The granulations bleed easily and hæmorrhage may be quite brisk. Pain is sometimes severe. Squamous carcinoma also manifests itself as an ulcer arising on the dorsum or lateral aspects of the digit or on the web between the fingers. It resembles in every way the commoner ulcerated cancer of the dorsum of the hand with its rolled or everted edges and granulations in its floor. Both types are not infrequently misdiagnosed as chronic infective lesions of the fingers.

Melanoma of the fingers may arise in a long-standing mole, but the subungual tumour commonly arises from an apparently normal nail-bed; Hutchinson (1886) termed this "melanotic whitlow," and drew attention to the frequency with which it is confused with a chronic paronychia. About 50% of patients with melanoma of the fingers have a history of injury six months or so before the appearance of the tumour. In some the trauma is followed by rapid growth or ulceration of a pre-existing mole. In the nail-bed the first sign is often a blue spot, or small mass beneath the nail. In contrast to the glomus tumour the discoloration is painless and does not disappear on pressure. In its later stages a melanoma may be confused with a subungual hæmatoma, but the pigment in a melanoma extends beyond the nail-bed and in time the tumour fungates through the nail, destroying it. When the melanoma is unpigmented, it closely resembles

a chronic infective granuloma ; but on careful inspection a thin bluish line or area can often be seen at the periphery, either at the tip of the finger or at the lateral edge of the nail. This characteristic pigmentation is said to be pathognomonic of malignant melanoma (Pack 1952).

Case-records

The first 3 cases were seen at a clinic for infections of the hand.

Case 1.—A housewife, aged 60, first attended the hand clinic in June, 1955. She had suffered from acrosclerosis for many years, and she had had many infections around the nails. About a year ago she had noticed that the right thumb was sore around the tip of the nail, which bled and discharged some pus. This sequence had been repeated at intervals up to about six weeks previously. On this occasion the condition had not subsided, and the thumb had started to swell, bleed freely, and smell unpleasantly.

On examination in the hand clinic, the right thumb distal to the interphalangeal joint was almost replaced by necrotic granulation-tissue, most noticeably over the site of the nail-bed. Seropurulent fluid oozed from the granulations, which were covered with crusts. The other fingers showed trophic changes at their tips and the nails were stunted and blackened. There were some soft glands in the axilla. Carcinoma of the thumb was provisionally diagnosed and a biopsy specimen was taken. This was reported as showing hyperkeratinisation due to non-specific inflammation with no evidence of malignancy. A further more generous biopsy specimen, however, confirmed the clinical diagnosis of malignant disease, and was reported as a multicentric squamous-cell carcinoma grade I–II. The thumb was amputated through the carpo-metacarpal joint as this was the most distal area free from growth on frozen section. Postoperatively the enlargement of the axillary glands rapidly subsided.

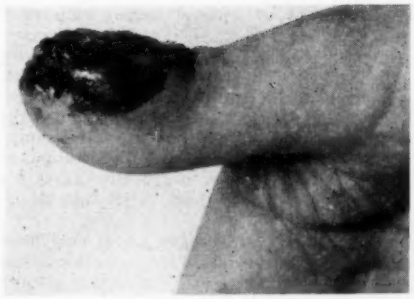
Case 2.—A housewife, aged 76, was seen in the hand clinic in 1948 with a history of a penetrating injury to the dorsum of the web of the first left space one year before ; this had never completely healed. A few weeks before it had become painful and she had treated it herself with poultices.

On examination, there was a hard plaque on the dorsum of the first web on the left hand. It was ulcerated with a rolled edge and there was a scab overlying the ulcer ; the surrounding tissues were inflamed. Biopsy showed a squamous-cell carcinoma and the lesion was widely excised. When last seen early this year, the patient was well with no sign of recurrence. When referred to the clinic this was an obvious tumour but its early evolution was like that of an infected wound and its chronicity would have suggested a retained foreign body.

Both these cases are typical examples of squamous carcinoma of the fingers. During most stages of the type exemplified by case 1 the lesion may be mistaken for a chronic infection with massive granulomatous changes, and it is important to realise that biopsy may not at first show the true nature of the lesion, partly because of changes due to the overlying chronic infection.

Case 3.—This patient, aged 50, nine months previously had sustained a minor injury to the interphalangeal joint of his right thumb. About a month later he had noticed a small dark blue line at the base of the thumb-nail. The line had slowly extended to the distal end of the nail, and the nail had begun to thicken and split until a V-shaped cleft had formed in the nail through which "flesh" began to protrude. The thumb had become painful for the first time. Three months previously he had been referred to another hospital where chronic infection of the nail-bed had been diagnosed and the nail removed.

On examination in the hand clinic the nail and nail-bed of the right thumb were almost replaced by "granulation tissue" covered with pus and dried blood, with the remains of deformed nail at the side of the mass (see figure). On close inspection there was a faint bluish discoloration at the distal end of the mass. Radiographic examination showed rarefaction of the distal phalanx but no signs of bone erosion, and biopsy confirmed the diagnosis of malignant melanoma. The thumb was disarticulated through the metacarpo-phalangeal joint. Gland biopsy showed no evidence of malignant deposits.



The next 2 cases were seen in other departments, and in both the initial diagnosis seems to have been chronic infection.

Case 4.—A motor mechanic, aged 53, attended with a history that about five months previously he had sustained an abrasion to his left forefinger which had failed to heal despite local applications.

On examination, there was an ulcer measuring $1 \times {}^{1}/_{2}$ in. on the radial side of the left index finger, involving the proximal phalanx. It had a raised edge with red granulations overlying a hard base. There was some slough overlying the granulations ; it was mobile on the underlying tissues and painless. Biopsy showed a grade I–II squamous-cell carcinoma. The index finger was amputated together with the head of the metacarpal.

Case 5.—This patient was initially treated elsewhere, but was referred to the department of radiotherapy at this hospital. He was a man, aged 62, who had been found to have "eczematous ulceration around the right thumb-nail with blackish pigmented patches in the skin around." This had been treated with sulphonamides, penicillin, and immobilisation but it had failed to heal ; and three months later the terminal phalanx and the head of the proximal phalanx had been removed ; the wound had healed well. Nine months afterwards two small firm subcutaneous nodules had appeared in the skin of the forearm ; and biopsy of this lesion had shown a malignant melanoma. Metastases developed rapidly in his axilla, and he died shortly afterwards with multiple secondary deposits.

Discussion

My purpose is to draw attention to primary malignant disease of the fingers presenting as a septic lesion.

The precise incidence of these tumours is difficult to assess. Mason (1937) estimated that 10% of all skin cancers affected the hand, but Clarke (1944) indicated that only 4% did so. Clarke suggested that 5% of all cancers of the upper extremities were on the fingers. Bickel et al. (1943), in a review of 155 melanomas of the extremities, found that 6·5% arose from the nail-beds of the fingers ; and Pack et al. (1952) found that 1·3% of his series of 1222 melanomas of all sites arose in this situation.

It is important that these tumours should be diagnosed as soon as possible, since the prognosis, particularly of malignant melanoma, depends directly on the extent of spread of the growth before treatment is begun. Driver and MacVicker (1943), discussing subungual melanoma, estimated that the five-year-survival rate was only 2% if lymph-nodes were involved at the time of treatment, whereas nearly half the patients with no lymphatic metastases survived longer. The prognosis in squamous-cell carcinoma of the fingers is excellent if the lesion is treated by excision before metastases occur.

It is clear from published reports that, as in the cases reported here, neoplasms of the fingers are still commonly diagnosed and treated as chronic septic lesions for long periods before their true nature is recognised. It cannot be too strongly emphasised that if a chronic lesion of a

finger persists despite treatment and in the absence of an adequate local or general cause, such as retained dead nail or foreign body, osteitis, or vascular disease, biopsy must be done. Any apparent chronic granulomatous lesion with bluish pigmentation must be viewed with suspicion until proved innocent. Benign lesions of the nail-bed, such as subungual fibroma, subungual exostosis, or glomus tumour, do not break through the nail, nor do they invade the skin. The malignant lesions at this site, however, they begin, lift the skin and nail and eventually replace them with fungating tumour (Jaffe 1930).

Biopsy of the tumour is easy under ring block anæsthesia and can be carried out in the outpatient department. If it does not at first show the true nature of the tumour, repeated biopsy of the finger or biopsy of glands will establish the diagnosis.

Summary

Primary cancer of the fingers is uncommon and squamous-cell carcinoma and malignant melanoma are the commonest forms.

These neoplasms are often confused with septic lesions of the fingers. 5 examples of this confusion of diagnosis are described.

Any apparent chronic infection of the fingers which does not respond to treatment should be investigated by biopsy.

I should like to thank Prof. R. S. Pilcher for his help and encouragement in preparing this paper; Mrs. Gwen Hilton for permission to report case 5; and Mr. A. Bligh for the photograph.

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INFLUENCE OF THE ADRENAL CORTEX ON GASTRIC SECRETION IN MAN

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THE secretions of the anterior lobe of the pituitary gland and the adrenal cortex are known to influence gastric secretion. When these glands are atrophied, as in Simmonds's disease (Escamilla and Lisser 1942) and Addison's disease (Rowntree and Snell 1931, Sorkin 1949), gastric secretion is depressed and treatment with cortisone may restore it (Stempien and Dagradi 1954, Kyle 1955). Conversely, the administration of corticotrophin or of cortisone increases the acidity of the gastric juice (Gray et al. 1951) and the excretion of uropepsinogen (Gray et al. 1954) and may aggravate or even cause peptic (especially duodenal) ulceration (Sandweiss 1954). Hydrocortisone increases the excretion of uropepsinogen, but corticosterone does not (Wolfson and Timmis 1955). In Cushing's syndrome, in which adrenocortical hormones are produced in excess, the gastric secretion might be expected to be increased, but few observations have been reported; the excretion of uropepsinogen may be increased (Gray et al. 1952) and gastro-intestinal hæmorrhage may develop (Swan and Stephenson 1935, Knowlton 1953). In the adrenogenital syndrome the gastric juice is said to be normal (Broster 1934).

It is not clear, however, whether the pituitary and adrenal hormones influence gastric secretion in the absence of overt disease of endocrine glands. Some patients with peptic ulcer have diminished pituitary and adrenal activity, judged by negative Thorn tests (Turner 1951, Foti 1954), and in some patients with duodenal ulcer the urinary excretion of formaldehydogenic steroids has been decreased during exacerbations and largely restored during remissions. The excretion of 17-ketosteroids is normal (Sandweiss et al. 1950).

The present investigation was undertaken to measure gastric secretion in patients with Cushing's syndrome before and after treatment by subtotal adrenalectomy, and to discover whether, in these or in other people, there was any correlation between the level of gastric secretion and the urinary excretion of adrenal cortical steroids.

Material and Methods

Gastric secretion in Cushing's syndrome was studied in 11 patients, 8 before and 7 after surgical therapy. The operation in 6 was subtotal adrenalectomy (removal of $^{9}/_{10}$ of one gland and all of the other) and in 1 (case 9) subtotal removal of one gland which contained a cortical adenoma. A satisfactory remission was obtained in all.

The urinary excretion of reducing corticoids was measured in 5 patients with hyperchlorhydria (more than 45 clinical units of free acid in a gruel fractional test-meal) but without clinical evidence of endocrine disorder.

The excretion of 17-hydroxycorticoids was measured in the 8 patients with Cushing's syndrome and in 8 healthy people with normal gastric secretion, 8 patients with duodenal ulcer, 5 patients with hyperchlorhydria but no peptic ulcer, and 5 patients with achlorhydria without other evidence of disease.

Gruel fractional test-meals lasting two and a half hours were studied in each person. This method of gastric analysis has serious limitations but was the one most readily available. Histamine was not given, because we thought it might be harmful to patients with adrenal disease. In those with Cushing's syndrome the test was done shortly before adrenalectomy and some months after operation, when cortisone replacement had been

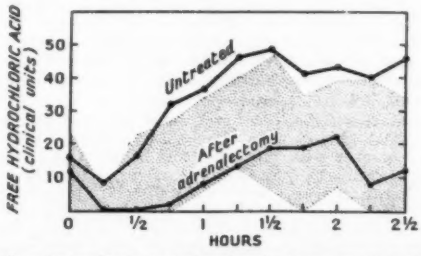

Fig. 1—Free hydrochloric acid after fractional test-meals in Cushing's syndrome. (Figures derived from data in table I. Normal range is derived from Bennett and Ryle [1921]).

TABLE I—GRUEL FRACTIONAL TEST-MEALS IN CUSHING'S SYNDROME (FREE HCL IN CLINICAL UNITS)

Case no.*	Untreated											After adrenalectomy										
	Resting	Hours after giving gruel										Resting	Hours after giving gruel									
		¼	½	¾	1	1¼	1½	1¾	2	2¼	2½		¼	½	¾	1	1¼	1½	1¾	2	2¼	2½
2	..	..	..	..	..	..	..	..	..	..	..	0	0	0	0	5	10	15	20	20	0	25†
3	0	0	0	18	0	48	50†	30	40	40	35	0	0	0	0	0	10	20†	10	15	15	10
4	..	..	..	..	..	..	..	..	..	..	..	0	0	0	0	15	20	20	22†	22†	15	20
5	0	0	0	0	0	0	5	0	10	10	15†	..	..	..	..	..	..	..	..	..	..	..
6	5	0	55	100	105†	95	90	80	75	75	75	..	..	..	..	..	..	..	..	..	..	..
7	30	15	0	0	35	70	105	95	100	80	115†	55	0	0	0	0	5	5	10	25†	0	0
8	..	..	..	..	..	..	..	..	..	..	..	15	0	0	5	25†	15	20	20	25†	0	10
9	0	5	15	20	25	40†	35	15	15	5	15	0	0	0	5	8	12†	12†	8	5	0	0
10	30	15	35	60	70†	60	45	40	30	40	55	15	0	0	5	5	20	40	45†	40	28	22
11	55	20	25	30†	25	12	12	12	12	10	10	..	..	..	..	..	..	..	..	..	..	..
12	8	8	9	28	32	39	41	60	61†	60	52	..	..	..	..	..	..	..	..	..	..	..
Mean	16	8	17	32	36	46	48	41	43	40	46	12	0	0	2	8	13	19	19	22	8	12

* Numbers 2–6 are those used by Beck et al. (1954).

† The highest concentration after giving gruel.

discontinued. In 4 only was the test done both before and after operation.

The excretion of reducing corticoids (Broadbent et al. 1953) and of 17-hydroxycorticoids (Reddy et al. 1952) was measured in twenty-four-hour specimens of urine without corticotrophin stimulation.

Results

Fractional Test-meals in Cushing's Syndrome (table I and fig. 1)

Untreated.—The average free-acid curve rose above the upper limits of normal after three-quarters of an hour and remained high for the rest of the test. In 2 cases it rose to over 100 clinical units. In 1 (case 5), who was very ill and had a slightly raised blood-urea level (51 mg. per 100 ml.), a very low curve was obtained. The mean highest concentration after giving gruel—i.e., excluding the resting juice—was 61 units. None of the patients showed evidence of peptic ulcer.

TABLE II—URINARY EXCRETION OF REDUCING CORTICOIDS IN FIVE HYPERCHLORHYDRIC PERSONS

Highest concentration of free acid in gruel fractional test-meal (clinical units)	Reducing corticoids (mg. per 24 hr.) (normal range 1·1–2·1)
62	6·6
100	0
80	12·4
78	5·6
80	3·9

After adrenalectomy the average free-acid curve remained near the lower limit of normal throughout the test. The mean highest concentration after giving gruel was 25 units, which is significantly lower than that before operation ($t = 2{\cdot}32$, D.F. $= 13$, $P = <0{\cdot}05$). In the 4 cases in which preoperative and postoperative tests were made there was a considerable reduction in the concentration of acid after adrenalectomy. The acidity of the resting juice was not altered significantly.

Correlation between Gastric and Adrenocortical Secretions

Preliminary investigation showed that the urinary excretion of reducing corticoids was often increased in hyperchlorhydric patients (table II). For this reason a controlled investigation of the excretion of 17-hydroxycorticoids (which was thought to be a more specific measure of adrenocortical function) in relation to gastric secretion was undertaken. The highest concentration of acid obtained after giving gruel was plotted against the twenty-four-hour excretion of 17-hydroxycorticoids (fig. 2). Though no significant correlation was found between the two variables, most of the patients who had high 17-hydroxycorticoid excretion (including several without Cushing's syndrome) also had a high concentration of gastric acid. On the other hand, a high acid concentration was often associated with normal or zero excretion of 17-hydroxycorticoids.

Discussion

It seems clear that the gastric hypersecretion in Cushing's syndrome is caused by an excessive production of steroids by the adrenal cortex, for it is abolished by adrenalectomy, and similar hypersecretion is produced by administering corticotrophin or cortisone. Although fatal bleeding from an acute gastric ulcer (Swan and Stephenson 1935) and from an unknown source (Knowlton 1953) has been reported, duodenal ulceration does not appear to have been observed in Cushing's syndrome, and it was not present in our cases. This is surprising in view of the gastric hypersecretion and the frequency with which ulceration follows the therapeutic use of pituitary and adrenal hormones.

The high level of excretion of reducing corticoid and 17-hydroxycorticoid excretion in some hyperchlorhydric patients suggests that the level of adrenocortical activity may be one factor influencing gastric secretion, even in the absence of overt disease of endocrine glands. There

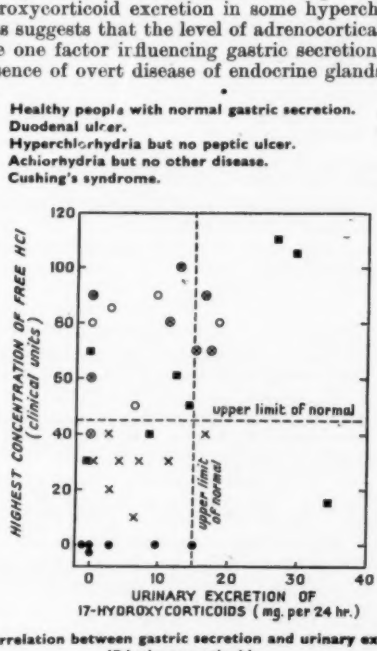

Fig. 2—Correlation between gastric secretion and urinary excretion of 17-hydroxycorticoids.

Though there is no correlation in general, most of those who had high 17-hydroxycorticoid excretion were hyperchlorhydric.

is evidence that some other adrenocortical hormones, besides the 17-hydroxycorticoids, may influence the gastric secretion. In Cushing's syndrome, for instance, we have found the excretion of reducing corticoids to be increased more consistently than that of 17-hydroxycorticoids (D. A. D. Montgomery and R. B. Welbourn, unpublished), and the patient (fig. 2) who had 70 units of free acid and no 17-hydroxycorticoid in the urine excreted large amounts of reducing corticoids (8·2 mg. in 24 hours). Of the 10 hyperchlorhydric patients who did not have Cushing's syndrome (fig. 2) only 4 excreted more 17-hydroxycorticoids than normal. On the other hand, 4 of 5 hyperchlorhydric patients (table II) excreted more reducing corticoids than normal. This difference, though not significant, is suggestive.

Our conclusions appear to conflict with those of others who found diminished pituitary and adrenocortical activity in patients with peptic ulcer. Foti's (1954) series, however, included only patients with gastric ulcer, a condition in which gastric secretion tends to be diminished. In Turner's (1951) series, in which the site of ulceration was not stated, it was suggested that the patients were studied during a phase of adrenocortical exhaustion following a period of overactivity which had induced an exacerbation of ulcer symptoms. There seems no way of reconciling our results with those of Sandweiss et al. (1950), who found diminished excretion of formaldehydogenic steroids in patients with duodenal ulcer.

Gastric secretion is influenced by many factors, including vagal and gastrin stimulation, enterogastrone inhibition, and the number of parietal cells in the stomach. It is not surprising, therefore, that no general correlation has been found between adrenocortical activity and gastric secretion. Further investigation of their relationship is required by more precise methods of estimating adrenal and gastric function.

Summary

Gastric secretion, measured by the gruel fractional test-meal technique, is often increased in Cushing's syndrome and is restored to normal by adrenalectomy.

The excretion of reducing corticoids is often high in hyperchlorhydric people who have no other signs of disease of the endocrine system.

A high excretion of 17-hydroxycorticoids is usually accompanied by hyperchlorhydria.

Adrenocortical hormones probably play a part normally in influencing gastric secretion.

We wish to thank Prof. H. W. Rodgers for his interest and help in this investigation.

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PARAPLEGIA FOLLOWING SPINAL ANÆSTHESIA

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MANY conflicting views have been expressed concerning the ætiology of paraplegia following spinal anæsthesia, for, although in many cases the paralysis has been associated with adhesive arachnoiditis, the exact cause of the lesion has been difficult to determine. There is, however, evidence suggesting that under certain conditions the anæsthetic itself may be incriminated. The case reported here supports this view.

Case-report

A housewife, aged 45, was admitted to hospital on Feb. 24, 1955, unable to walk. She had difficulty with micturition, and her bowels were constipated. In the autumn of 1953, a myoma of the uterus was removed under general anæsthesia, and a year later she was readmitted to hospital with symptoms and signs of small-bowel obstruction. Laparotomy was done under spinal anæsthesia and the obstruction was relieved. The anæsthetic was given by the surgeon with the patient in the lateral position. The spinal needle and syringes were autoclaved; and the skin was prepared with a 70% solution of ethyl alcohol. 20 ml. of a 1/500 "light" solution of cinchocaine hydrochloride ('Nupercaine') was used, and before the neck of the ampoule was opened it was sterilised with 70% ethyl alcohol; at no time was it immersed in antiseptic. The postoperative course was uneventful until the seventh day, when the patient complained of slight weakness in her right leg. Apparently little attention was paid to this complaint and she was discharged a few days later. During the following weeks the weakness in her leg became more pronounced, and by the beginning of December, 1954, she was unable to walk unaided. In January, 1955, there was progressive deterioration, with spread of the weakness to her left leg. For three weeks before her admission to hospital she had been completely unable to walk, her bladder control had become more difficult, and constipation increasingly troublesome.

Neurological examination on admission revealed absence of abdominal reflexes but very brisk knee and ankle jerks in both legs, with clonus; bilateral extensor plantar responses were elicited. From the level of the 6th thoracic segment downwards sensibility to light touch, pinprick, and temperature, was impaired on both sides; position sense was absent. There was muscle weakness in the abdominal wall, and wasting was obvious in both lower limbs.

Cisternal puncture and diagnosis.—Repeated attempts at lumbar puncture were unsuccessful and eventually cisternal puncture was done. 45 ml. of cerebrospinal fluid (C.S.F.) was removed and was replaced by 100 ml. of air. There was a block at the level of the 4th thoracic vertebra. Spinal tumour was provisionally diagnosed.

Operation and postoperative course.—On the basis of this diagnosis Dr. Stig Lindgren did a laminectomy. When the dura was exposed no pulsation was noted, and when it was opened extensive adhesions between the meninges and the spinal cord were found and divided. As the ventral aspect of the cord was approached a cystic swelling extending upwards at the level of the 6th thoracic vertebra was seen compressing the cord. From this swelling 50 ml. of clear colourless fluid was aspirated, and it was decided that the cyst was continuous with the subarachnoid space above. After operation, the patient's condition improved for two weeks, but this improvement was not maintained and her condition is now the same as before operation.

Histological examination confirmed the operation finding of adhesive arachnoiditis. There was no evidence to support the earlier diagnosis of spinal tumour.

COMMENT

We suggest that in this patient the association between the spinal anæsthetic and the subsequent paralysis is irrefutable. A latent period of seven days before the onset of symptoms is not uncommon, and it distinguishes this type of injury from that following direct damage to the spinal cord. The progression of the disease is due to gradual constriction of the cord by the extension of fibrous adhesions, and consequent impairment of the blood-supply. An erroneous tentative diagnosis of spinal tumour, followed by laminectomy which establishes the correct diagnosis is a common sequence in cases of adhesive arachnoiditis.

Discussion

Adhesive arachnoiditis is not confined to patients who have had spinal anæsthesia.

As long ago as 1909 Sir Victor Horsley reported a series of 21 patients in whom the gradual onset of weakness in one leg was ultimately followed by paraplegia. Adhesive arachnoiditis was diagnosed usually at laminectomy, because the clinical features were indistinguishable from those of spinal-cord tumour. Characteristically there were dense adhesions obliterating the subarachnoid space in the mid-dorsal region and extending caudally. The spinal cord looked shrunken, and in many cases it was compressed by cystic accumulations of C.S.F. In addition, there was often evidence of ischæmic changes in the cord substance.

In 1936 Elkington published a review of 41 cases with similar symptoms and signs. He admitted that the cause of the adhesive arachnoiditis was obscure but suggested that trauma, infection, or syphilis could be responsible. In 18 patients, however, he was unable to show any cause. Elkington emphasised that the essential change was the formation of adhesions and cysts in the subarachnoid space, and he drew attention to the poor prognosis in patients with secondary ischæmic changes in the spinal cord.

Adhesive Arachnoiditis Following Infection

More recently Turner (1948) has shown that diffuse adhesive arachnoiditis may complicate cerebrospinal meningitis either during the acute phase or in the convalescent period. Of the 13 cases described, bacteriological evidence of meningococcal infection was obtained in 9, but in the remainder the diagnosis was based on clinical evidence.

The single case reported by Barker and Ford (1937) is interesting in that the arachnoiditis complicated acute benign lymphocytic meningitis. Improvement followed laminectomy, but after an attack of influenza the patient again became paraplegic.

Attention was first drawn to the relation between virus infections and adhesive arachnoiditis by Horsley (1909), who described paraplegia following an attack of herpes. Many years later Brock et al. (1936) reported 3 cases of paraparesis after spinal anæsthesia and suggested then that the paraparesis was caused by a virus infection superimposed on the effects of spinal anæsthesia. The suggestion that a subclinical virus infection might precipitate adhesive arachnoiditis after spinal anæsthesia was again made by Terp (1950) when describing 5 cases; in 4 the anæsthetic had been a 1/1500 "light" solution of cinchocaine hydrochloride and in the 5th a 1/200 solution of "heavy" cinchocaine hydrochloride. Thorough investigation failed to establish the cause of the arachnoiditis; but Terp pointed out that, although his technique had been the same for many years, all the cases occurred within a period of six months. Such a grouping certainly suggests an infection with a long incubation period, and in the absence of positive evidence a virus infection would appear most likely.

Adhesive Arachnoiditis Following Spinal Anæsthesia

After the administration, in the same operating-list, of a 1/1500 "light" solution of cinchocaine hydrochloride to 2 patients who later became paralysed, judgment was given in the High Court that this complication resulted from contamination of the anæsthetic by phenol (*Times* 1953). It was postulated that contamination was caused by the permeation of phenol through minute cracks in the anæsthetic ampoules. This judgment was far from generally accepted by anæsthetists; a subclinical virus infection seems as likely a cause of the complication as phenol contamination. It is, of course, possible that the damage was caused by the anæsthetic alone—an explanation for which there is considerable clinical and experimental evidence.

Davis et al. (1931) gave clinical doses of cinchocaine and procaine intrathecally to dogs, in which unequivocal pathological changes in the subarachnoid space developed; the most constant change was a meningeal reaction, which was found in every animal. The inflammatory response was accompanied by thickening of the arachnoid membrane, which contained collections of proliferated arachnoidal cells.

Further investigation by Lundy et al. (1933) established that procaine has a direct toxic effect on the spinal cord of cats and that the concentration of the drug is as important as the total quantity administered.

Lundy's work was confirmed by MacDonald and Watkins (1937), who, also working with cats, obtained conclusive proof that the incidence of paralysis after spinal anæsthesia by procaine was related to the concentration of procaine introduced into the theca. They pointed out that in the cat the bulk of spinal nervous tissue was large in relation to the space within the bony canal, and that therefore the volume of fluid available for diluting the anæsthetic was small. They suggested that in man paralysis was usually avoided because of the rapid dilution of the anæsthetic by C.S.F.

"Light" cinchocaine anæsthesia.—Clinically, since the publication of Hewer's account (1933) of adhesive arachnoiditis after the use of "light" cinchocaine, many similar cases have been reported. In particular Thorsén (1947) investigated the complications of spinal anæsthesia in a series of 2493 cases. 1749 of the patients were given procaine, and in none of these did adhesive arachnoiditis develop; but among the 744 patients to whom "light" cinchocaine was administered arachnoiditis developed in no less than 6. The likelihood of "light" cinchocaine anæsthesia being followed by arachnoiditis is also shown by Terp's (1950) report, already mentioned.

The most likely explanation for the increased risk of injury from "light" cinchocaine is probably related to the volume used. When 10–20 ml. of anæsthetic solution is injected into the spinal theca, there is considerable risk of displacement of C.S.F., so that the membranes and cord, particularly in the immediate vicinity of the injection, are bathed in a solution which remains relatively undiluted.

Continuous spinal anæsthesia.—A further group of patients in whom adhesive arachnoiditis is particularly liable to develop are those exposed to continuous spinal anæsthesia. This involves continuous or repeated injections of small quantities of the anæsthetic, so that a limited area of the spinal cord and meninges tends to be in prolonged contact with the potentially noxious solution.

Kennedy et al. (1950) reported 12 cases of severe spinal-cord paralysis caused by spinal anæsthesia, including 5 cases of adhesive arachnoiditis following continuous spinal anæsthesia. A year later Woods and Franklin (1951) reported progressive spastic paraplegia in a patient who had had continuous spinal anæsthesia, and who died from pulmonary embolism four days after laminectomy.

At necropsy adhesive arachnoiditis was found; the pathological changes were confined to that portion of the cord and meninges which had been in contact with the anæsthetic. It was concluded that the cause of the spastic paraplegia

was a gradually constricting arachnoiditis with subsequent interference with the blood-supply to the cord.

Williams (1954) described 9 cases in which adhesive arachnoiditis developed after spinal anæsthesia. He drew attention to Horsley's observation (Horsley 1909) that the pathological changes in the cord and membranes in adhesive arachnoiditis were found most commonly in the mid-dorsal region. According to Williams there is a tendency for the anæsthetic solution to accumulate in this area (which in itself increases the risk of arachnoiditis) and he pointed out that the spinal cord is particularly vulnerable to injury in the region of the 6th dorsal vertebra because of a relatively poor blood-supply.

Other anæsthetic techniques.—Damage to the spinal cord and membranes may be caused by other anæsthetic techniques. Koch (1947) described paraplegia in a patient who was inadvertently given an intrathecal injection of 5 ml. of an 80% solution of ethyl alcohol; and Rosenbaum et al. (1952) reported a series of 6 cases in which arachnoiditis developed after "heavy" cinchocaine had been used to induce "saddle" block anæsthesia in childbirth. They suggested that the circulation through the vertebral vascular system is impaired by the high abdominal pressure during labour, and as a result a high concentration of anæsthetic solution may persist in the subarachnoid space longer than normal.

pH of anæsthetic solution.—One further factor to be considered in the causation of adhesive arachnoiditis is the hydrogen-ion concentration of the anæsthetic solution. Normally the C.S.F. is slightly alkaline, with a pH in the region of 7·6. The pH of anæsthetic solutions of cinchocaine is definitely acid (4·5 or less). Although a small volume of injected acid solution is probably neutralised at once, it seems likely that when larger volumes are injected neutralisation may be delayed and the membranes and spinal cord in contact with the solution damaged.

Although much work remains to be done on adhesive arachnoiditis, there is sufficient evidence to justify abandoning techniques that require large volumes or continuous injection of anæsthetic solution. Permanent paraplegia with its profound social and economic repercussions is too great a price to pay for any temporary advantage gained by the surgeon.

Summary

A case of adhesive arachnoiditis following spinal anæsthesia with "light" cinchocaine is described.

The ætiology of adhesive arachnoiditis, with particular reference to contamination and infection of the C.S.F., and anæsthetic drugs and techniques, is discussed.

The use of "light" cinchocaine and continuous spinal anæsthesia should be abandoned.

We are indebted to Dr. Stig Lindgren and Prof. Ian Aird for their advice and criticism.

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DIAGNOSIS OF ISLET-CELL TUMOURS OF THE PANCREAS

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ISLET-CELL tumours of the pancreas have been known since Nicholls (1902) described them, but neither their physiology nor their clinical features were understood until after the discovery of insulin by Banting and Best in 1922. An islet-cell tumour was first successfully removed by Roscoe Graham (Howland et al. 1929).

Despite the supposed rarity of this condition its prompt diagnosis is of great importance because these patients have often been labelled as neurotics, psychotics, or epileptics and have been treated as such.

Until quite recently the diagnosis depended entirely on the fulfilment of the triad of criteria of Whipple and Frantz (1935): (1) a hypoglycæmic attack resulting from fasting or exertion; (2) a blood-sugar level below 50 mg. per 100 ml. during the attack; and (3) the prompt relief of an attack by glucose.

Assay of serum for insulin content offers a possibility for differentiating hyperinsulinism from functional hypoglycæmia. Willebrands and Groen (1954) obtained higher values than normal in 4 patients with an islet-cell adenoma confirmed by operation. After removal of the tumour the insulin content of the serum returned to a normal level.

Two main methods of plasma-insulin assay have been investigated for practical application. The first of these is an in-vivo method using alloxan-diabetic, hypophysectomised, adrenalectomised rats (Bornstein 1950). These rats are difficult to prepare, and the mortality-rate during the preparation is high; in addition many variable factors enter into the final calculations, increasing the possibility of experimental error.

The in-vitro method, using the rat diaphragm, is technically easier and more satisfactory. Gemmill (1941) demonstrated the uptake of glucose, by the isolated rat diaphragm, from a buffer solution and the deposition of glycogen in the muscle. The process is accelerated by the addition of small quantities of insulin to the buffer solution, and a quantitative relationship between the amount of insulin present and the uptake of glucose by the muscle was established by Stadie and Zapp (1947) and Krahl and Park (1948).

As a result of experiments on young healthy men, Vallance-Owen and Hurlock (1954), using the rat diaphragm, obtained fasting plasma-insulin levels of 31–82 micro-units per ml. in healthy people.

With these figures indicating the range of normality a diagnostic assay was made on the patient whose case-report appears below.

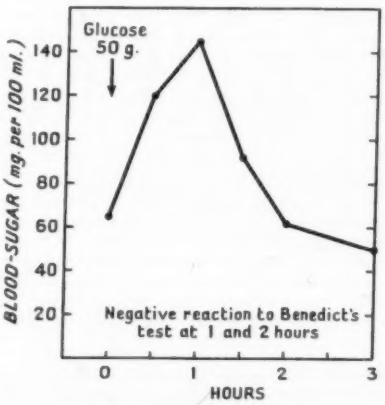

Fig. 1—Glucose-tolerance curve.

Case-report

A man, aged 33, was admitted semi-conscious to St. James' Hospital on April 3, 1955. His wife stated that he was subject to fits, the last one having occurred four hours previously.

On examination the signs were typical of a hypoglycæmic attack, and after the intravenous administration of 50% glucose the patient rapidly became normal physically and mentally.

He later stated that in the past two years he had had intermittent blackouts, which were increasing in frequency. The episodes usually took place before the midday or the evening meal, and he related them to being tired or without food for some hours. The premonitory symptoms always included hunger, dizziness, and diplopia. If he felt an attack to be imminent, sudden exercise would precipitate it, but he found that it could be averted by taking glucose tablets or food. There was nothing relevant in the past or family history.

Investigations

An islet-cell tumour of the pancreas was tentatively diagnosed, and the patient was admitted for further investigations. A *glucose-tolerance test* gave the results shown in fig. 1. It was only necessary to continue the test for three hours to demonstrate the hypoglycæmia, but usually the recommended duration of the test is six hours. The low fasting blood-sugar level, the rapid fall from the peak following the ingestion of 50 g. of glucose, and the final low value at the end of three hours suggested that glucose was rapidly removed from the circulation. *Liver-function tests* were normal. *Plasma-insulin assay:* the patient was starved on two separate occasions; the first time to produce an attack, to observe any clinical changes immediately before the attack, and to ascertain the period of starvation required for this purpose; and the second time to obtain blood immediately preceding the attack for the plasma-insulin assay. On the first occasion the patient was starved for nineteen hours. Towards the end of this time he became restless and was

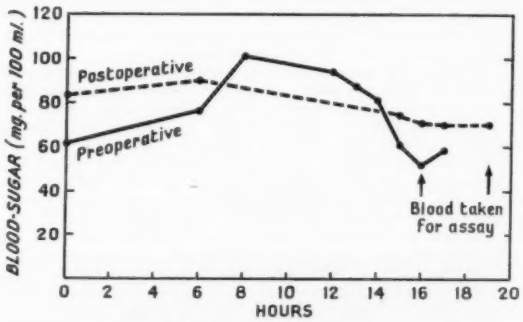

Fig. 2—Plasma-insulin assay.

behaving like a mischievous child. Suddenly he became violent, shouting and screaming, and it required three men to restrain him. The clinical signs were again typical of a hypoglycæmic attack which responded immediately to intravenous glucose. The blood-sugar level was 53 mg. per 100 ml. while the attack was taking place. The second time the test was made, the blood-sugar level was estimated at intervals (fig. 2). When the patient showed signs of an impending attack, blood was taken for the plasma-insulin assay. An impending fit was diagnosed by comparison with the previous test in which the duration of starvation and the premonitory symptoms and signs had been noted. The plasma-insulin assay, made by Dr. J. Vallance-Owen and his colleagues at the Hammersmith Hospital, showed that there were 300 micro-units per ml. compared with the normal value of 31–82 micro-units per ml. On this result an islet-cell tumour of the pancreas was firmly diagnosed.

Operation

The pancreas was explored by Mr. Norman Tanner on April 21, 1955. A pink tumour 2 cm. in diameter was found near the surface of the pancreas and 5 cm. from the tail. It was attached on its deep surface to the underlying pancreatic tissue but was easily enucleated. The remainder of the pancreas and other likely sites of ectopic pancreatic tissue were palpated, but no further tumours were found; the liver and other abdominal viscera appeared normal on palpation.

Histological Report (Dr. G. T. Allen)

A section (fig. 3) showed an encapsulated tumour with a collagenous matrix in which lay scattered irregular masses of islet tissue and ducts. The more compact areas of islet tissue

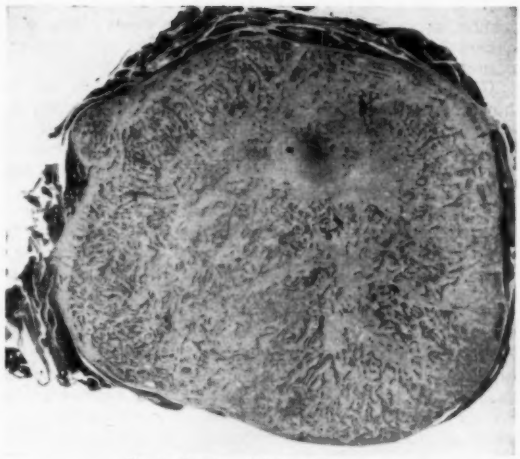

Fig. 3—Section of islet-cell tumour.

were recognisable as such, but many areas were in the form of strands of irregular islands. Specific stains for granules failed. In view of the encapsulation of the tumour and in spite of the irregularities of the islet tissue, this was reported as a benign tumour. Another section (fig. 4) showed easily recognisable islet tissue near the capsule. Some of the histological features of this tumour suggested a mixed tumour of a fibro-adenomatous type rather than a pure islet-cell tumour more commonly seen in the substance of the gland. All the sections presented the difficulty of deciding the benign or malignant nature, histologically, of some of these tumours.

Postoperative Course

Next day the fasting blood-sugar level was 156 mg. per 100 ml., and on two further occasions the levels were 116 mg. and 104 mg. per 100 ml. The starvation test and plasma-insulin assay were repeated, but no symptoms or signs of hypoglycæmia appeared in nineteen hours. The results of blood-sugar estimations throughout the test are shown in fig. 2. On comparing the preoperative and postoperative results it will be seen that the blood-sugar level remained more constant after removal of the tumour. The plasma-insulin level at the end of nineteen hours was 50 micro-units per ml.

Discussion

These cases nearly always present as attacks of spontaneous hypoglycæmia, the causes of which are numerous. Those of clinical significance in adults are functional hypoglycæmia, islet-cell tumours of the pancreas, disease of the liver, and endocrine disorders of the pituitary, thyroid, and adrenal glands.

The first two conditions are the most important and, although clinically they are distinguishable, plasma

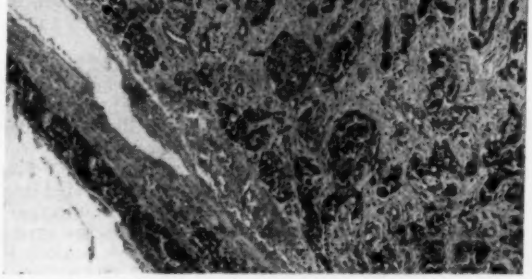

Fig. 4—Section showing islet tissue near capsule.

insulin assay is of most use in these cases; the other causes will usually be recognised during the course of clinical and laboratory investigations.

Glucose metabolism in the body depends on the hormonal balance between the pancreas, pituitary, and adrenal glands, and an abnormal blood-sugar level only indicates hormonal imbalance and not dysfunction in one particular gland. For this reason a low blood-sugar level may not reflect pancreatic hyperactivity.

In some cases, as in the present one, because of compensatory mechanisms the blood-sugar level may not drop below 50 mg. per 100 ml., and immediately one of the triad of criteria of Whipple and Frantz (1935) is not fulfilled, although a tumour is present.

"Plasma-insulin" assay obviates the risk of these variable blood-sugar levels and differentiates between organic hypoglycæmia (due to an islet-cell tumour) and so-called functional hypoglycæmia. In the latter the fasting blood-sugar is normal but becomes subnormal two to six hours after the ingestion of carbohydrate. In contrast to this, organic hypoglycæmia always occurs after a period of fasting, and the fasting blood-sugar is persistently low.

Summary

In a case of spontaneous hypoglycæmia due to an islet-cell tumour of the pancreas, plasma-insulin levels were assayed before and after operation.

By means of plasma-insulin assay the diagnosis of islet-cell tumour can be confirmed, and the causes of spontaneous hypoglycæmia differentiated.

I am indebted to Dr. Vallance-Owen and his colleagues for the plasma-insulin assays; Mr. Norman Tanner, who operated; Dr. G. T. Allen and Dr. P. W. Kippax, who reported on the specimens; Miss E. Mason, who prepared the graphs and photographed the specimen; Dr. R. J. Harrison, without whose advice and encouragement this article would not have been written; and Dr. M. Bewlay, who originally diagnosed the case.

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ARTIFICIAL INSEMINATION AFTER INTRATHECAL INJECTION OF NEOSTIGMINE IN A PARAPLEGIC

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IN 1949 Guttmann reported that intrathecal injection of neostigmine in male patients with traumatic paraplegia induced erection of the penis and ejaculation of spermatic fluid. Neostigmine administered by other routes has not been shown to have this effect.

Guttmann injected neostigmine intrathecally in order to test the spermatic fluid and to control the progress of hormone treatment in paraplegics; and in 5 cases he used this method to obtain semen for artificial insemination, which, however, did not result in pregnancy.

The technique of the neostigmine test is simple. 0·2 mg. of neostigmine in 1 : 1000 aqueous solution is injected intrathecally at L4–L5 vertebral interspace; the injection is made slowly after mixing the contents of the syringe several times with the cerebrospinal fluid. After the injection the patient lies supine or on his side without a pillow. About an hour after the injection erection followed by several ejaculations of spermatic fluid takes place. Specimens are sent for examination.

The injected neostigmine acts presumably on the undamaged spinal centres in the lumbar cord, below the level of the lesion, which control erection and ejaculation. In addition the neostigmine temporarily diminishes the reflex activity of the isolated spinal cord; this effect manifests itself by diminished spasticity of the paralysed limbs. In some cases there are other side-effects, such as a decrease in the systolic and diastolic blood-pressure, headache, nausea, and general weakness; all these effects disappear after two to three hours.

I have injected neostigmine intrathecally for testing purposes, and in one case for the purpose of fertilisation. Pregnancy resulted.

Case-report

A man, aged 25, in 1948 sustained a fracture-dislocation of T6 vertebra, resulting in a complete spinal syndrome at T8 segment. He remained spastic with pronounced flexion and adductor spasticity. In the early stages of his disability he had repeated attacks of severe bilateral orchitis, which responded to treatment. He had from time to time had spontaneous erections without ejaculation. The urine, routinely examined, sometimes contained a few spermatozoa.

Neostigmine Tests.—The first neostigmine test, before the patient's marriage in October, 1952, revealed only 500,000 spermatozoa per ml., with no motility. A further test, in April, 1954, showed an improved count of 20 million spermatozoa per ml.; 15% of the spermatozoa were motile, and there was considerable microspermia.

Treatment.—Testosterone 25 mg. daily for fourteen days and gonadotrophin (Winthrop) 1000 units daily for four weeks were administered in order to improve the count sufficiently for an attempt at artificial insemination.

Attempted Fertilisation.—The first attempt at fertilisation was made in June, 1954. At the patient's request artificial insemination was not undertaken. After intrathecal neostigmine he was left with his wife, and the induced erection was used for coitus. This attempt did not result in fertilisation. A specimen of semen recovered from one of the ejaculations showed a count of 10 million spermatozoa per ml., of which 10% were motile. The decrease in the count, compared with that before hormone treatment, was apparently due to a "rebound phenomenon," associated with the administration of both testosterone and gonadotrophin. From then onwards he was given 1000 units of gonadotrophin alone daily for four weeks. A second unsuccessful attempt at impregnation was made under similar conditions in August, 1954.

Artificial Insemination.—The third attempt was made in November, 1954. This time artificial insemination was undertaken by a gynæcologist with a specimen obtained after intrathecal injection of neostigmine. No spermatic count was taken. This also proved unsuccessful. The fourth attempt was made on Dec. 4, 1954. This resulted in pregnancy, and the patient's wife was delivered of a healthy daughter on Sept. 3, 1955. When in March, 1955, it became obvious that his wife was pregnant, the patient's spermatic count was checked: it amounted to 200 million per ml., of which 50% were motile.

Confirmation of Paternity.—Blood tests gave the following results:

Father: Group A Rh′+, RhO+, RH″−, HR′+.
Mother: Group A RH′+.
Infant: Group A RH′+.

Conclusions

So far as I know this is the first reported case of successful impregnation by the spermatozoa of a paraplegic after intrathecal injection of neostigmine. In the present case impregnation would otherwise have been impossible, as there was no chance of spontaneous ejaculation. There are of course well-authenticated instances of fatherhood in spinal paraplegics without neostigmine having been administered (Freeman, unpublished and our own cases), but these cases have been in paraplegics with preserved faculties of coitus and ejaculation.

This method opens an important new field in the physical and psychological rehabilitation of paraplegics.

I thank Dr. J. Gordon, chief medical officer, ministry of defence, for permission to publish this article; Dr. C. Rosen-

berger, gynæcologist, Hadassa University Hospital, Jerusalem, for carrying out the artificial inseminations; and Dr. E. Steinitz, of Jerusalem, for performing some of the intrathecal injections.

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Preliminary Communications

ABLATION OF THE PITUITARY GLAND FOR SECONDARY CANCER

IN 1955 Rothenberg et al.[1] described the treatment of certain forms of secondary cancer by destroying the pituitary gland by injecting radioactive substances. Technically this procedure is not difficult; but, since many of the patients are in poor general condition and there may be secondary deposits in the skull and/or the scalp, it is essential that the operation should be as simple and safe as possible.

The risk of introducing infection by intranasal injection and the added accuracy obtainable by exposure of the pituitary gland encouraged us to persevere with the intracranial approach.

It is necessary to ensure that the volume of fluid injected is small but contains optimal radioactivity. Too little radioactivity would be ineffective in destroying the gland, too much would damage the neighbouring vital parts of the brain, and too large a volume of fluid might burst through the diaphragma sellæ and spill over on to the surrounding structures. A needle is used with a bore just large enough for the radioactive substance to flow through easily.

A sucker attachment is essential to prevent any contamination of the surrounding brain by any radioactive material that might escape from the sella or from the needle after injection.

1. Rothenberg, S. F., Jaffe, H. L., Putnam, T. J., Simkin, B. *Arch. Neurol. Psychiat., Chicago*, 1955, **73**, 193.

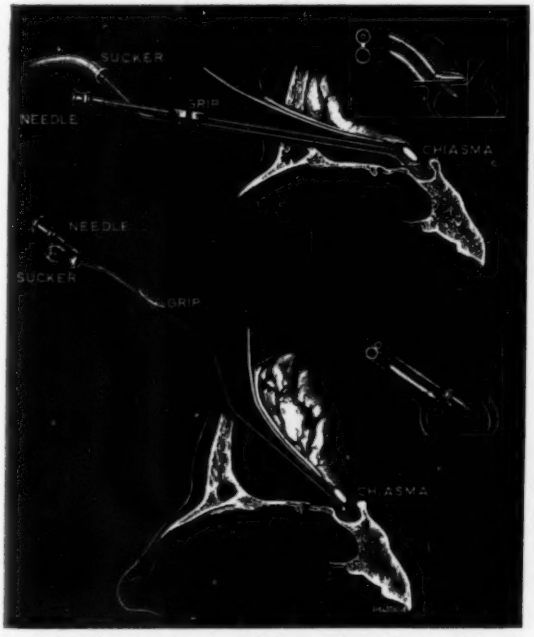

Fig. 1—Injection of radioactive fluid into pituitary gland: *upper register*, usual approach from just above right orbital margin; *lower register*, ordinary transfrontal approach.

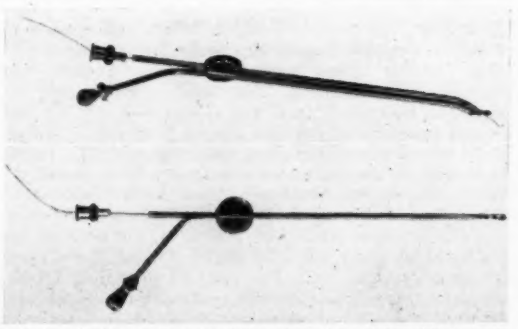

Fig. 2—Needle for usual approach from just above right orbital margin.

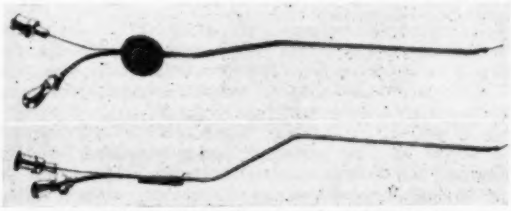

Fig. 3—Needle for ordinary transfrontal approach.

The usual approach is shown in the upper part of fig. 1. Through a small skin-flap a trephine hole is made just above the right orbital margin and overlapping the midline by about 0·5 cm. The dura is opened, and the frontal lobe is raised and retracted laterally. The combined needle-sucker (fig. 2) is inserted gently along the floor of the anterior fossa until the needle aperture is over the fossa, the end slipping under the chiasma. The sucker tubing is attached, the needle pushed home, and the radioactive fluid injected. After a minute or so the needle is withdrawn. The sucker is left in situ for a few more minutes.

When the frontal sinuses are very large, or when there is any abnormality in the region of the pituitary fossa, the ordinary transfrontal approach to the pituitary gland is used, as shown in the lower part of fig. 1. After the bone flap has been raised, the frontal lobe is raised extradurally as far as the sphenoidal ridge and thereafter intradurally. The optic nerves and chiasma are exposed, and the needle with sucker attached (fig. 3) is inserted through the diaphragma sellæ into the pituitary gland. The injection is made into the four quadrants of the gland without completely withdrawing the needle. The sucker prevents contamination. After a few minutes the needle is withdrawn and a lintine patty is placed over the hole in the diaphragma sellæ for a few minutes, after which it is withdrawn and tested with a geiger counter. Leakage is minimal by this technique.

The needles are of stainless steel. The needle for the usual approach (fig. 2) is 15 cm. long and projects 0·75 cm. beyond the sucker, which is of gauge 15 S.W.G. The needle tube is of gauge 23 S.W.G. When the ordinary transfrontal approach is used the needle (fig. 3) is 18·65 cm. long, the sucker-needle guide tube is of gauge 13 S.W.G., and the outside diameter of the needle 15 S.W.G.

My thanks are due to Prof. B. W. Windeyer, Dr. J. D. N. Nabarro, Miss M. D. Snelling, and the late Miss Diana Beck for permission to operate on their cases; to Dr. A. M. Jelliffe, who is collaborating with me in this work; Mr. R. A. Millard and his colleagues of the instrument department of the Middlesex Hospital, for the needles; Miss E. Hewland, medical artist of the hospital, for the drawings; and Mr. M. Turney for the photographs.

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A RAPID METHOD OF ESTIMATING FIBRINOGEN

ACUTE hypofibrinogenæmia occurring in pregnancy or after surgery is an emergency which requires rapid diagnosis and treatment. The bleeding which then takes place can be rapidly fatal and is arrested only by intravenous injection of purified human fibrinogen; massive blood-transfusion alone gives uncertain results. Purified fibrinogen is scarce, and for economy it is essential to know the plasma-fibrinogen level before and during treatment. Many methods for the quantitative estimation of fibrinogen have been described, but none of these combines accuracy with the simplicity and speed needed for such emergencies. The method described below is accurate, simple, and quick; the result is obtained within 25 minutes of receiving the blood.

Method

The coagulation temperature of fibrinogen is about 55°C in neutral solutions.[1] Other plasma-proteins are coagulated at temperatures exceeding 60°C. It was found that the turbidity produced by heating saline dilutions of plasma at 56°C is directly proportional to the fibrinogen concentration and that it remains constant for many hours; even after twenty-four hours the original turbidity can be restored by shaking. The result has been expressed in terms of the barium-sulphate standard used by Kunkel[2] for his zinc-sulphate turbidity test, so that this method can be adopted in any laboratory without further estimation of fibrinogen by Kjeldahl analysis.

Procedure

Plasma is obtained from blood to which has been added 2 mg. per ml. of either the oxalate mixture of Heller and Paul or 'Disodium Sequestrene.' 0·2 ml. of plasma is thoroughly mixed with 3 ml. of 1% sodium chloride in each of two half-inch diameter test-tubes. One of the tubes is placed in a water-bath at 56°C for 15 minutes. The extinction reading of the heated mixture is measured against the unheated blank in the 1 cm. cell of a spectrophotometer set at 650 mμ. At this dilution 1 Kunkel unit is equivalent to 42·8 mg. of fibrinogen per 100 ml. in the plasma sample.

Comments on the Method

Measurements at timed intervals have shown that a constant turbidity is always obtained after 15 minutes at 56°C.

Different dilutions of plasma are required if the fibrinogen content is much higher or lower than normal. Serial dilutions of plasma were heated at 56°C, and it was found that, when the turbidity exceeded 20 Kunkel units, its relation to the fibrinogen content was no longer linear. A plasma-fibrinogen level above 850 mg. per 100 ml. produces a turbidity greater than 20 Kunkel units when diluted 1 in 16 and requires further dilution—e.g., 1 in 31—to obtain accurate results. Fibrinopenic plasma gives a faint turbidity at a dilution of 1 in 16; therefore a less dilute mixture is desirable—e.g., 1 in 11, or 1 in 7. The result is calculated from the formula given below.

A 'Unicam SP 350' spectrophotometer was used for these experiments, but any photo-electric colorimeter or spectrophotometer may be used. It should be calibrated at 650 mμ (or with 'Ilford filter No. 608') with the barium-sulphate standard used by Kunkel.[2] 1 Kunkel unit is equivalent to 26·8 μg. per ml. of fibrinogen in the diluted plasma. The concentration of fibrinogen in the undiluted plasma can therefore be calculated from the formula:

$$F = 2{\cdot}68 \times \frac{(Vs + Vp)}{Vp} \times \frac{(Et \times 20)}{Ek}$$

where Et = extinction reading of test, Ek = extinction reading of barium-sulphate standard, F = fibrinogen content of plasma in mg. per 100 ml., Vp = volume of plasma in mixture, and Vs = volume of saline solution in mixture.

To find whether substances other than fibrinogen are precipitated at 56°C, many samples of serum were diluted and heated at this temperature. These were from healthy people as well as from patients whose serum contained abnormal proteins or abnormal quantities of proteins. In none was there any turbidity. The presence of dextran did not interfere with the result. Dilutions of lipæmic sera which are clarified by heating to 56°C resume their original turbidity on cooling to room-temperature; interference from this source is negligible if lipæmic samples are cooled under the tap before the turbidity is measured.

Calibration of the Method

The fibrinogen content of 25 samples of plasma was estimated by micro-Kjeldahl distillation; the fibrinogen content of these samples was 197–534 mg. per 100 ml. Each sample was also tested by turbidity after heating at dilutions of 11, 16, and 31. For each of the 75 results a constant (K) was calculated by dividing the extinction reading by the concentration of fibrinogen in the diluted plasma. From the mean value of K, which in these experiments was 597×10^{-6}, the conversion factor required to relate turbidity to fibrinogen content was calculated. The standard deviation of K was $22{\cdot}9 \times 10^{-6}$ and the coefficient of variation 3·84%. The greatest deviation from the mean for any result was 8%.

I should like to thank Dr. George Discombe for his advice and encouragement.

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2. Kunkel, H. G. *Proc. Soc. exp. Biol., N.Y.* 1947, **66**, 217.

New Inventions

SELF-RETAINING RETRACTOR FOR VARICOSE-VEIN SURGERY

RETRACTION in the depths of a groin incision for juxtafemoral ligation has always been difficult. The area is small, yet it is packed with thin-walled vessels which, if torn, can give rise to embarrassing moments. The instrument shown in the accompanying figure has

been designed to give an unimpeded field during the operation. It renders tiring, and therefore unstable, hand retraction unnecessary in almost every case. The shafts are curved in order to fit snugly to the upper thigh, while the wire-loop blades, which are gentle to the tissues, are pivoted at their point of suspension. This ensures a consistently stable grip as the retractor opens along its very wide arc.

I am grateful to Mr. W. J. Cooper, of Messrs. Allen & Hanburys, for his help.

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Medical Societies

MANCHESTER MEDICAL SOCIETY

Surgery of Peptic Ulcer

OPENING a discussion in the section of surgery on March 13, Mr. H. T. COX said that dissatisfaction with partial gastrectomy—a well-established procedure with a low mortality-rate—mainly centres around its side-effects. Numerous procedures have been devised to reduce or eliminate these; but, if the various gastric operations are not to rotate in popularity, their results must be compared by means of a simple clinical yardstick. In 100 cases of duodenal ulcer treated by gastro-enterostomy plus vagotomy, he found the side-effects markedly less than in 100 cases treated by partial gastrectomy.

Mr. IAN M. ORR (Preston) said that in the stimulation of gastric acid secretion two factors play a part—namely, nervous stimuli via the vagus, and hormonal stimulation due to the activity of cells in the pyloric half of the stomach, in the lesser curvature, and in the duodenum and upper jejunum. Hypersecretion does not occur in every peptic-ulcer patient, and in cases of duodenal ulcer the flow of nerve-secreted acid may be normal or low. The general level of the unstimulated night secretion curves was high in more than half of a duodenal-ulcer group, but even among normal people a few have exceptionally high nerve-secreted acid. This suggests that vagotomy is indicated in only a proportion of duodenal-ulcer cases and might do harm if practised indiscriminately; and, as night acid readings may be high in people without ulcers, high readings are not necessarily an indication of the activity of the ulcer. Surgical treatment must take into account not only the hormone-secreting activity and the nervous secretory activity of the patient, but the age, sex, and physical fitness, and the type of ulcer—duodenal, gastric, or anastomotic.

In a series of 734 operations for peptic ulcer, patients with gastric ulcer had Billroth-I gastrectomies, while those with duodenal ulcer had two-thirds gastrectomies of the anterior Finsterer-Lake type, plus vagotomy if the night secretion was unduly high. A small group, mainly elderly women, had gastro-enterostomies with or without vagotomy. In the gastrectomy group 2 patients had a two-stage resection because of gross œdema and inflammation of the duodenal ulcer. The mortality-rate for the series was 1·1%, and a follow-up of 210 patients over five years showed that 5 developed anastomotic ulcers after gastrectomy, without vagotomy, for duodenal ulcer. Of those treated by gastrectomy plus vagotomy none have so far developed anastomotic ulcers. In the late results no striking difference is apparent between the various groups, apart from the incidence of stomal ulcer in 2·4% of patients having gastrectomy without vagotomy.

Reviews of Books

Cancer Cells

E. V. COWDRY, director, Wernse Cancer Research Laboratory, Washington University, St. Louis. Philadelphia and London: W. B. Saunders. 1955. Pp. 677. 112*s*.

THE author is an individualist, already well known from his *Textbook of Histology* and his *Problems of Ageing*. It is therefore not surprising that in covering a very wide field he lays more emphasis on certain subjects in which he excels. In fact, he says himself that "no single individual can take the place of all the specialists now investigating cancer."

None the less a well-considered plan has been followed, "each chapter constituting more or less of a unit, carrying the account a step farther and supplying a basis for what comes next. . . . The order of presentation was changed again and again as the writing progressed in efforts to gain some measure of continuity." For convenience, a clear summary of the contents is given at the end of each chapter.

The first chapter explains the distinction between malignant and benign tumours. The next three chapters describe the properties of malignant cells, including abnormalities of function, multiplication, and spread, and changes in the cytoplasm and nucleus. Then follows a description of the agents capable of bringing about malignant transformations, the theories concerning their actions, and the susceptibility of normal cells to these carcinogens. The latent period and the factors modifying the production of cancers are next discussed. The last 100 pages deal with general data on diagnosis, prevention, and treatment, and with the history and achievement of modern cancer research. The bibliography includes about 3000 references, compiled with great care.

Those concerned with cancer research are all too familiar with the man who "has an idea" about the cause or cure of cancer. No better book could be placed in his hands, for it is an accurate and up-to-date summary of a great deal of the effort which has been made during the past fifty or sixty years in trying to identify the cause and the cure for cancer. Those who seek information on how the malignant cell differs from the normal will find a reasoned account of the present state of knowledge in this field. Those already tackling this problem may find the section devoted to their special field rather superficial, but this is inevitable in a general book on cancer. For those who gibe at the slow progress which has been made in clinical and experimental studies of cancer and who complain that more time is devoted to mice than to men, the reading of this book will be a salutary experience.

Mind and Body

Psychosomatic Pathology. PEDRO L. ENTRALGO, professor of medical history and rector of Madrid University. London: Harvill. 1955. Pp. 150. 12*s*. 6*d*.

THIS erudite but extremely interesting and readable book is both a critique and a historical survey of what is now known as psychosomatic medicine. The main theses which Professor Entralgo puts forward, with skill and persuasiveness, are:

(1) The term "psychosomatic pathology" has two complementary meanings. One is literal and superficial: the study of human disease from the point of view of the two aspects which it presents, the psychological and the somatic. The other is derivative and comprehensive: "the scientific consideration of human disease in conformity with the personal conditions of man's psychophysical reality."

(2) Understood in this derivative and inclusive sense, psychosomatic pathology is a relatively new development. Medicine has always been, in one guise or another, "psychosomatic"; but the same cannot be said of pathology.

(3) Primitive Christianity first suggested the possibility of a true psychosomatic pathology. "Sin" was distinct from "disease," and this view opened the way to a theoretical and practical consideration of the possible relationships between "moral disorder" and "physical disorder."

(4) "Western" pathology, from the School of Salerno to Freud, has not succeeded in becoming fully psychosomatic. It has been hampered in this respect by its fundamental "naturalism," a continuation of the Hellenic, and by too exclusive an adherence to the "visive" concept of knowledge.

(5) Twentieth-century psychosomatic pathology has regained—in a different form—certain of the possibilities that primitive Christianity offered to the knowledge and practice of the physician, and has revealed the simple underlying reason for the "personalism" of the ancient Semite.

Beginning with the concept of disease in primitive times, Professor Entralgo sketches the beliefs held by two important cultures, the Assyro-Babylonian, in which the sick man was regarded as having sinned, and the Hellenic, in which the disease is considered more as a departure from man's "nature." This led to the naturalism and physiological bias of Greek medicine, which in turn through the teachings of Galen influenced Christian medicine towards physiology. The concept of disease in "occidental" medicine is then discussed, and in his concluding chapter "Towards an anthropological medicine," Professor Entralgo examines the ideas about neurosis before the time of Freud, the work of Freud, and the creation of what he terms "anthropological" medicine, which includes psycho-analysis and psychosomatic medicine in its scope and practice.

The breadth and clarity of Professor Entralgo's survey will stimulate any physician or psychiatrist who is

interested in the history of the theories by which men have endeavoured to explain disease or to heal their companions.

Research Films in Biology, Anthropology, Psychology and Medicine

ANTHONY R. MICHAELIS, PH.D., technical director, Scientific, Industrial & Medical Photographic Laboratories Ltd., London. New York: Academic Press. London: Academic Books. 1955. Pp. 490. £4

BY describing in detail the film techniques available and by quoting many experiments in which they have been applied, Dr. Michaelis hopes to encourage research-workers to consider the use of film as a tool in their own work.

He gives advice on cameras and camera stands for various tasks, types of illumination, the preparation of a film treatment and shooting script, and the use of time-markers for obtaining quantitative results, of time-lapse and high-speed cinematography, of cinemicrography, and of X-ray cinematography. He even mentions the application of television as an image-converter in certain circumstances.

The section on the medical sciences occupies about a third of the text. It is surprising to read, however, that in 1929 "not a single British surgical film could be named" in view of the fact that several surgeons, notably Alexander Don and Cecil Wakeley, had filmed operations before that date. By 1929 films on such subjects as tuberculosis, venereal diseases, physiology, cytology, and health education were also available. This section describes the techniques and equipment suitable for medical work, and their various applications in the investigation of locomotion, digestion, respiration, the genito-urinary system, the circulation, the sense organs, neurology, pathology, and aviation medicine.

There is perhaps too much detail in the book. Descriptions of experiments are often accompanied by details of the scientific results derived from them, data that are surely readily available to the research-workers for whom the book is intended. And is Dr. Michaelis right when he says that, in films other than those for personal analysis, no shot should exceed thirty seconds? In the cinema and in television, Hitchcock and O'Donovan have shown that interest can be maintained in one shot for much longer, and the television interlude film of the potter's wheel is a well-known proof to the contrary.

If there is little in the book that is actually new, Dr. Michaelis has collated information from most parts of the world where the cine camera is used for research, and his compilation of 1500 authors and references makes the volume the most valuable reference book now available in this field.

Obstetrical Anesthesia

Its Principles and Practice. B. B. HERSHENSON, M.D., director of anesthesia, Boston Lying-in Hospital. Springfield, Ill.: Charles C. Thomas. Oxford: Blackwell Scientific Publications. 1955. Pp. 403. 69*s.*

THE administration of anæsthesia for obstetrics has in the past been largely left in the hands of obstetric residents or the more junior residents in anæsthesia. This is an unsatisfactory state of affairs, and Dr. Hershenson rightly places more faith in the competence and experience of a trained anæsthetist than in any special drug or method of anæsthesia. Though he recognises that there is a real need for better drugs, he is forthright in his condemnation of the exaggerated emphasis often placed on a single agent as the safest or best method of anæsthesia in obstetrics.

Dr. Hershenson aims to help doctors in their selection of a technique for a particular case, and he presents a fairly full and well-referenced account of the subject. The accent is on general analgesia and anæsthesia, but local methods are included. The physiology of pain in labour, the pharmacology and selection of drugs used in obstetrics, diseases complicating pregnancy and labour, and asphyxia neonatorum are discussed in detail.

The author is an anæsthetist, and his book will therefore be all the more welcome to those actively engaged in administering anæsthetics, since the literature of this subject has been written largely by obstetricians. But it is a difficult book to read; there is much needless repetition and a great deal of elementary fact which one would like to assume every anæsthetist knows before he assumes responsibility for an obstetric patient. It is also a pity that no recognition is given to the considerable amount of knowledge accumulated on this side of the Atlantic about the value and use of trichlorethylene as an analgesic in labour.

Galen on Anatomical Procedures

Translated with introduction and notes by Prof. CHARLES SINGER, F.R.S. London: Oxford University Press. 1956. Pp. 314. 37*s.* 6*d.*

UNTIL recent years the works of the greatest and most prolific medical writer of antiquity were closed books to the modern reader. Professor Singer has now added another to the few works of Galen which have been translated from the Greek into English.

Galen's work entitled *De Anatomicis Administrationibus* is the text of lectures on anatomy delivered in Rome about A.D. 177. It thus preserves the very words of an ancient teacher. The Greek text was translated into Latin in 1531, and in this form the work had a profound influence on Vesalius and other great Renaissance anatomists. Though Galen had some knowledge of human anatomy, especially of the bones, most of his dissection was done on the rhesus monkey and the Barbary ape, in which many parts are greatly different from their counterparts in man. Professor Singer has not only provided a scholarly translation of Galen's text, but he has also identified wherever possible the structures mentioned, and has given them their modern anatomical names.

The book, which is illustrated, is a basis for the study of the sources available for the foundation of modern anatomy. It has been published for the Wellcome Historical Medical Museum.

Surgery of the Ambulatory Patient (3rd ed. Philadelphia: J. B. Lippincott. London: Pitman Medical Publishing. 1955. Pp. 866. 96*s.*).—This book from the University of Pennsylvania is divided into five sections. Hrant H. Stone describes anæsthesia, with particular attention to local and regional infiltration. E. J. Pulaski deals with antibiotics and sepsis, and gives a refreshingly common-sense exposition of the relations between organism, antibiotic, and patient. H. M. Burros discusses urological conditions, and Louis Kaplan fractures and dislocations. The main author, L. K. Ferguson, coördinates and completes the work with descriptions of techniques and equipment, soft-tissue trauma, tumours, and a variety of lesions arranged according to the regions in which they arise. It is an impressive parade of the types of case treated in the outpatient departments of the Pennsylvania University hospitals.

The emphasis is on conditions which the author and his contributors have treated as ambulatory, but they allow themselves to discuss those which can *sometimes* be treated in the ambulant, and also similar conditions, to be distinguished from them, which require bed rest and admission to hospital. More and more conditions are now being treated with the patient out of bed, so that there may soon be no limits to a book with this title. The surgical reader will draw his own line between what he treats in outpatients and what he admits to hospital, and in this country he will probably include such conditions as flexor-tendon suture, thyroglossal cyst, and supraspinatus bursa in those he prefers to keep under his own observation. The advantages of early ambulation have to be balanced against the fact that rest is essential to tissue healing as it is to the resolution of inflammation.

Individual surgeons will disagree with some of the details in this book, but, read with discrimination, it will be very useful in those hospitals where outpatient surgery is highly developed and under experienced supervision. It includes a number of conditions, some of them not uncommon, such as mucous cyst of the nail fold, which have not, so far as we know, been described elsewhere in surgical literature. Illustrations are copious, clear, and often beautiful. Advice on treatment is detailed and practical. The catalogue of pathological conditions is exhaustive. Lippincott's continue their policy of printing each page in two columns, and have produced the whole work accurately, generously, and attractively. Not only those concerned with outpatient and accident surgery, but all general and orthopædic surgeons, will find something of interest and value in it.

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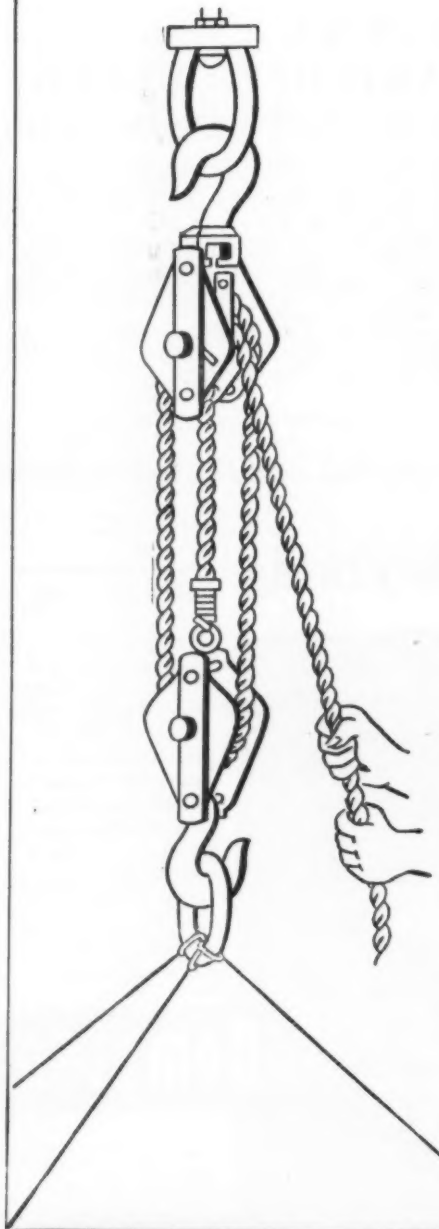

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THE LANCET
LONDON: SATURDAY, MAY 12, 1956

The Maternity Services

WE welcome the announcement that, following a recommendation in the Guillebaud report, a committee has been set up to inquire into the maternity services.[1] The lack of unity in maternity work under the National Health Service has been much criticised, for it has led to duplication and confusion. It is not uncommon to hear of patients attending in the same week a hospital antenatal clinic, a local-authority clinic, and her own doctor. More serious are misunderstandings whereby patients receive little or no antenatal care because each authority thinks that this being provided by another. In some areas coördination has been achieved by advisory obstetric committees which include representatives of the various bodies concerned. The Royal College of Obstetricians and Gynæcologists[2] has recommended unified control at national, regional, and area levels; and on a later page of this issue Professor SCOTT RUSSELL emphasises the urgency of the need for coördination.

Further problems will be before the new committee. Of these perhaps the most important are the place of the confinement and the personnel who should man the obstetric services. The picture of the family doctor and trusted friend bringing the son and heir into the world in the patient's own home is attractive but hardly realistic today. The factors that have caused the trend towards confinement in hospital are well known, and it seems likely that both the wishes of the community and the greater safety for the mother in hospital will cause this trend to continue. But the hospital is not necessarily the safest place for the newborn; the risk of cross-infection by resistant strains of staphylococci is a factor strongly in favour of the type of scheme suggested in this issue by Dr. SLUGLETT and Dr. WALKER. They propose that normal cases be delivered by the family doctor and domiciliary midwife in a simple labour-room attached to a maternity hospital, and not in the patient's own home. The patient and her baby would be taken home by the midwife within a few hours after delivery. Such a scheme might be extended to include the earlier discharge from hospital of those at present booked for institutional confinement. It has been suggested that if all patients fit for discharge went home on the seventh day, existing maternity beds would suffice for the delivery in hospital of all women who need or desire this. On the other hand, during these seven days babies would run the risk of infection, and it might prove wiser to discharge such patients twenty-four hours after delivery, once careful observation had shown that the condition of mother and baby was satisfactory, before transfer to a lying-in ward. When from time to time the bed state necessitates early discharge from hospital, the mothers and babies come to no harm, but inevitably the domiciliary midwife resents having to visit patients whom she has not delivered. It seems that a prerequisite for routine early discharge from hospital would be unification of the midwives' services, so that patients would not be passed from the care of one organisation to that of another. Such unification is in fact recommended for wider reasons in the report of the Royal College of Obstetricians and Gynæcologists.

The place of the general practitioner in the maternity services was discussed at a conference held last November by the College of General Practitioners,[3] at which arguments were voiced in favour of increasing the maternity beds at the disposal of general practitioners. This is certainly desirable provided it is recognised that if every practitioner does only his own numerical share of obstetrics he will not have enough continuing experience to remain efficient. (In one large executive-council area, more than half the doctors who had expressed their willingness to conduct obstetric cases were found to have dealt with 5 cases or fewer in a year.) Professor RUSSELL elaborates this theme and declares that "dabbling in midwifery must be discouraged in much the same way as dabbling in surgery is discouraged." The majority of women will be safely delivered of live infants whatever the standard of work; and the very normality of the reproductive function may blind us to imperfections in care. The practitioner dealing with only a few cases each year may well think that he is rendering an efficient service if only one baby is lost every two years; but this may represent a stillbirth-rate of 5% compared with a possible 1–2%. There are very strong arguments for limiting obstetric practice to a smaller number of general practitioners who have a special interest in the subject and who by training and continued experience can maintain efficiency and merit the name general-practitioner obstetrician.

In replanning the maternity service, the importance of the contribution by local-authority clinics should not be overlooked. The staffs of clinics are at present handicapped by lack of direct knowledge of the outcome in cases that come under their care antenatally; and Dr. SLUGLETT and Dr. WALKER suggest that these doctors should have the opportunity of attending confinements. There is evidence that in some areas the clinics are being used less than formerly; and where this is so steps should be taken to ensure that the help they offer—notably blood tests, dietary supplements, and education—is not overlooked.

However the service is reorganised, the midwife, the general-practitioner obstetrician, the local authority with all its ancillary services, and the specialist and hospital services will each have a part to play. Once coördination has been improved, there will be room for experiments in the distribution of work between these groups, including experiments with discharge home after different periods.

1. See *Lancet*, April 28, 1956, p. 574.
2. Royal College of Obstetricians and Gynæcologists: Report on the Obstetric Service under the National Health Service. London, 1954.
3. College of General Practitioners: Conference on General-Practitioner Obstetrics, Nov. 20, 1955. London, 1956. Pp. 40. 3*s*. 6*d*.

Hormones and Breast Cancer

ALTHOUGH the endocrine control of mammary cancer was attempted, with initial success, sixty years ago, this method of treatment has yet to be widely used. Increasingly radical surgery and more intense radiation have been urgently pursued for decades, with little improvement in survival-rates and often only questionable benefit to the patient. Yet these measures are still the only relief offered to the great majority of women with breast cancer.

Increasing knowledge of the factors affecting the growth of mammary tumours, and the evolution of endocrinology, have gone hand in hand, so that today the clinician has a large volume of experimental fact on which he can draw. It has been shown that many breast tumours depend for their maintenance and continued growth on those hormonal factors which control the growth of normal breast epithelium. The maturation and rupture of the ovarian follicle, with its waxing and waning secretion of the steroid hormones œstrogen and progesterone, follows a similar rhythmic rise and fall in the secretion of the pituitary gonadotrophins. Thus, removal of the ovaries destroys the synergistic action of the pituitary and ovarian hormones responsible for the stimulation of breast growth and consequently causes regression of mammary tumours which are dependent on these mechanisms. As the original work of WOOLLEY [1] demonstrated, the adrenal cortex can secrete steroid ovarian hormones after ovariectomy and can thus make up for their deficiency in the stimulation of breast growth. It was this work which prompted the courageous and effective technique, introduced by HUGGINS and BERGENSTAL,[2] of total adrenalectomy with or following ovariectomy; this operation once more removed the stimulus to malignant breast growth and produced rapid though temporary regression of symptoms in about half the patients with advanced metastases. This treatment was successfully adopted in this country, notably by CADE [3] and PYRAH and SMIDDY.[4] But the operative mortality is appreciable, and by no means all patients are relieved of symptoms for long enough to justify the operation. It remains to decide whether it should be reserved for patients in an advanced stage of the disease. Despite the removal in this way of the only glands known to produce steroid hormones, œstrogens can still be excreted in the urine,[5] and this activity sometimes persists even after hypophysectomy. There is as yet no adequate evidence to show whether or not adrenal rests, normally encountered on occasion along the line of the urogenital tract, are responsible for this activity, but failing such an explanation it seems that an additional source of steroid hormones must be sought.

Another approach to abolition of circulating steroid hormones is hypophysectomy, which will deprive the target organs (the ovaries and adrenals) of the essential trophins secreted by the pituitary.[6] This operation has the virtue of removing at the same time pituitary secretions such as mammatrophin (prolactin) and somatotrophin (growth hormone), which are important factors in breast development and secretion.[7] According to RUSSELL'S [8] recent report, division of the pituitary stalk—a less severe operation than complete hypophysectomy—produces almost total loss of pituitary secretion by cutting off the blood-supply and causing selective necrosis of the anterior pituitary. This operation might well be substituted for the more severe one. Another alternative is irradiation of the pituitary: FORREST et al.[9] implanted radon-seeds into the pituitary fossa by means of a cannula passed through the nostril and sphenoidal sinus; but damage to the optic tract was a serious complication in 4 out of their 33 cases. Other techniques of irradiation are being investigated which may reduce the risks of blindness. In his communication on p. 671 Mr. DAVIES describes a method of injecting radioactive fluid into the pituitary fossa. But irradiation does not with certainty destroy all the endocrine cells, and methods which achieve this aim will be more effective.

Other hormonal factors are certainly of fundamental importance in the growth of breast cancer, and it is possible that what are now regarded as autonomous tumours may in fact be dependent on secretions as yet unidentified. One known hormone stimulating breast growth, however, is mammatrophin or prolactin. Much less is known about it than about steroid hormones, but it is encouraging to know that a method has been developed for the estimation of this substance in urine,[5] and that it is being applied to the investigation of the hormonal status of cancer patients. So much concerning these mechanisms is still unknown that we may be guilty of neglecting what we do know. Certainly this seems to be the case so far as the relation of the thyroid gland to breast growth is concerned. It has been suggested by LOESER [10 11] for many years that hypothyroidism is conducive to and aggravates breast cancer, and there is some statistical evidence to support this. Experimentally, it is known that thyroid deficiency sometimes permits a more florid growth of the breast,[12] and there is fragmentary evidence [13] that pituitary adenomas consequent on thyroid deficiency can cause increased stimulation of breast growth. It seems that the simple trial of thyroid administration to women with breast tumours would be easy, cheap, not obnoxious to the patient, and possibly beneficial.

While the endocrinological approach offers hope that the fundamental mechanisms of mammary carcinogenesis may finally be unravelled, it is obvious from clinical experience and from the detailed observations of FOULDS [14] that "progression" to an autonomous state takes place in breast cancer. To interfere with hormonal mechanisms in the ways we are doing today seems to halt tumour growth and spread for a time only. If treatment was advised before the patient's condition had seriously deteriorated and before the tumour had "progressed" to a considerable degree of autonomy, then the delay to further spread might at least be longer. Before autonomy is completely established, however, the lot of the patient can be improved, and, as Dr. Foss shows in his article

1. Woolley, G. W. Recent Progress in Hormone Research. New York, 1950; p. 383.
2. Huggins, C., Bergenstal, D. M. *Cancer Res.* 1952, **12**, 134.
3. Cade, S. *Proc. R. Soc. Med.* 1955, **48**, 549.
4. Pyrah, L. N., Smiddy, F. G. *Lancet*, 1954, i, 1041.
5. 53rd Annual Report of the Imperial Cancer Research Fund, 1956, p. 13.
6. Luft, R., Olivecrone, H. *J. Neurosurg.* 1953, **10**, 301.
7. Ciba Foundation Colloquia on Endocrinology, 1952, **4**, 381.
8. Russell, D. S. *Lancet*, April 21, 1956, p. 466.
9. Forrest, A. P. M., Peebles Brown, D. A., Morris, S. R., Illingworth, C. F. W. *Ibid*, April 14, 1956, p. 399.
10. Loeser, A. A. *Brit. med. J.* 1954, ii, 1380.
11. See *Lancet*, 1955, i, 491.
12. Trentin, J. J., Hurst, V., Turner, C. W. *Proc. Soc. exp. Biol., N.Y.* 1948, **67**, 461.
13. Furth, J. *Cancer Res.* 1953, **13**, 477.
14. Foulds, L. *Ibid*, 1954, **14**, 327.

this week, the administration of exogenous hormones can do something to alleviate symptoms in advanced cases. He emphasises the need to give hormone therapy in general a more rational basis, and he emphasises the difference in response to hormone therapy before and after the menopause. Of 17 patients who responded to androgens, 14 had had their first symptom before the menopause, whereas of 14 who improved with œstrogens, 13 had had their first symptom after the menopause; and there were other differences in the behaviour of the two types of cancer. ELLIS [15] and his colleagues also concluded that œstrogens were more effective in postmenopausal women. Foss's view that present techniques are inadequate to detect hormone-dependence may be too gloomy. What is lacking is not the methods but arrangements whereby individual attention can be given to each patient with breast cancer. The recent refinements in the technique of urinary œstrogen determination, such as those recorded by BROWN,[16] have given these estimations a validity not previously known, and their extended application to problems of this kind, although tedious, is sorely needed.

Salute to Adventurers

AFTER the Metropolis Management Act was passed in 1855, forty-seven medical officers of health were appointed to the London districts (they were almost the only ones in the country), and in April, 1856, eight of them met at the house of Dr. PAVY in Finsbury Square. At a further meeting on May 13 the Metropolitan Association of Medical Officers of Health came into being: this became the Society of Medical Officers of Health in 1873; and next week it celebrates its centenary.

The M.O.H.s of those early days were embarking on a new venture: they had scant support from the vestries (who were often openly hostile); they had no textbooks to consult; and they were faced with "those difficulties and perplexities which must inevitably arise from so novel a departure in municipal administration." [17] It was for these reasons, and "to promote efficiency in the discharge of their duties and to aid the progress of sanitary science" that they felt the need for an association. Their choice of Sir JOHN SIMON as the first president must have been automatic. After 7 years as the first M.O.H. for the City, he had in 1855 become the first central medical officer of the Board of Health; but the minutes of the association's first meeting show that he was chosen solely for his own qualities "and not in any way because of the office he held under the government." Among his many distinguished successors were Sir GEORGE BUCHANAN (1875–77) and Sir SHIRLEY MURPHY who, as president in the jubilee year (1906), described the society's first fifty years in an address which, with the other contributions to the jubilee number of *Public Health*,[18] gives us a mass of information, not only about its activities but also about the progress of public health in this eventful period. Since its jubilee the society's presidents have included Sir FRANCIS FREMANTLE, Sir WILLIAM SAVAGE, Sir ALEXANDER MACGREGOR, Prof. R. H. PARRY, and Sir ALLEN DALEY. Now, in the centenary year, this office is fittingly held by Dr. CHARLES WHITE, who until his retirement a few weeks ago, was, like the first president, M.O.H. for the City of London, but is perhaps even better known, both at home and abroad, for his previous work in the adjacent post.

At first the society concerned itself mainly with sanitary reform and the control of infectious diseases; and it soon began a liaison with Government departments which has steadily improved, and which has often influenced legislation. An outstanding achievement as long ago as 1857 was the inauguration of a weekly return of infectious diseases among recipients of relief; but this was discontinued after a year, despite repeated appeals to the Government, and thirty years were to elapse before the first notification Act was passed in 1889. As time went on, more and more attention was paid to personal health; and discussions took place on domestic and school hygiene and physical culture, the teaching of hygiene in schools, and the control of tuberculosis. The early years of this century saw legislation on midwives, maternity and child welfare, school health, and tuberculosis, and after the first world war special groups of the society were formed for the benefit of the assistant medical officers doing this work. A fever group was also established: a dental officers group came into being; and what is now the Services group, with a membership of 300 past and present officers of the Armed Forces, was started in 1920. Describing, in the centenary number of *Public Health*,[19] the changes that have taken place in the membership and activities of the society, Dr. STANLEY WALTON points out that medical officers of health are now in the minority: the fellows include university teachers, officers in central government departments, chest physicians, medical journalists, factory doctors, and consultants in infectious disease. Partly for this reason, many feel that a second change of title would now be appropriate, and it is interesting to see that as long ago as 1905 the alternative name of "United Public Health Society" was suggested—one that would not be out of place today.

The society's work was much affected by the National Health Service Act; but its history is full of examples of its ability to adapt itself to such changes. It can congratulate itself, among other things, on having continued, after the Act was passed, the activities of its tuberculosis group and on retaining many chest physicians and sanatorium doctors as fellows; for this has done much to counteract the division of responsibility in tuberculosis control which the Act created. The fever group has played a similar part. But the Act gave the public-health service more than it took away: for instance its section 28, dealing with care and aftercare and the prevention of disease, affords (subject to Ministerial sanction) almost unlimited scope for excursions into new preventive territory. These opportunities have not been overlooked by the society, and its deliberations during the past decade show that attention is now being paid, for example, to mental ill health, the problem family, the care of the elderly, and the expanding work of health visitors, social workers, and

15. Ellis, F. *Proc. R. Soc. Med.* 1944, **37**, 731.
16. Brown, J. B. *Lancet*, 1955, **1**, 320.
17. *Public Health*, 1906, **18**, 2.
18. *Ibid*, p. 211.
19. *Ibid*, May, 1956, p. 6.

home nurses. The very mention of these subjects makes it obvious that modern public-health practice cannot be successfully carried out in isolation: it requires serious coöperation, not only between the branches of our profession but with a host of outside agencies as well. The society's council includes a number of doctors who are not themselves in the public-health service, and its minutes show the great importance it attaches to representation on other bodies, lay and medical, and to joint meetings to discuss matters of common interest. Similarly, many of the fellows themselves are making every effort to increase collaboration with their colleagues in the hospitals and in general practice. The barriers, indeed, are breaking down at last, and this is one of the most hopeful aspects of post-war public health. Let us trust that the years of disappointment are over, and that the Society will prove as adventurous at the beginning of its second century as it was at the beginning of its first.

Annotations

SMOKING

ON Monday the Minister of Health was questioned in the House of Commons about the association between tobacco-smoking and lung cancer. The tenor of his replies (see p. 696) was profoundly unsatisfactory. He might have used the occasion to state the danger categorically and to undertake to bring this to the notice of the public by other means. Instead he refused to initiate a publicity campaign and suggested that "the extent of the problem should be neither minimised nor exaggerated." Within an hour the tobacco companies had issued a smoke-screen thick enough to obscure even a much plainer statement.

If any other poison sold for public consumption were believed to be causing some thousands of deaths each year, its sale would be suppressed. One reason why this step has not been taken in the case of tobacco is that any Government initiating such a measure would fall on the morrow: as a nation we are tobacco-addicted. A second reason is that if the Treasury were denied the sum of £707 million a year now being yielded by the tobacco duty our fiscal policy would have to be radically re-shaped. There is at present no chance—or, as the smokers among us would put it, no risk—that the sale of tobacco will be controlled.

But this does not signify that we should accept the status quo. In London nearly all those engaged in investigating the long-term effects of tobacco on health or specialising in the treatment of lung cancer gave up smoking some time ago. We must not rest content until the whole community has understood the facts that have led this small group to change their habit. Occasional statements in Parliament do not reach, or are not long remembered by, most people. In 1954 the then Minister of Health issued a warning [1] which was hardly less explicit than that uttered this week. Yet since then we have all often heard well-educated people ask whether there "is anything in this tobacco scare." Their ignorance may be due partly to reluctance to learn; but partly without doubt it is due to the mortal unwillingness to accept anything which has not been said again and again.

A decision to control the sale of tobacco would be administrative—in other words, political. But a decision to impress the hazards on the public may properly be regarded as medical. Such a campaign would yield no rapid results: heavy smoking bears none of the stigma of heavy drinking, and an exchange of cigarettes is as much part of the established social order as an exchange of handclasps. But a useful start has already been made. For instance, in a recent B.B.C. television programme a doctor set out the facts with admirable objectivity. Beyond such individual efforts, the Central Council for Health Education might suitably issue pamphlets for distribution by general practitioners; and the British Medical Association might again use the occasion of its annual representative meeting—always closely watched by the lay press—to rehearse the facts. If such approaches prove ineffective doctors might band themselves together to bring home the risks to their patients. This would be a fine exercise in preventive medicine—and incidentally in public spirit. Few patients with bronchial carcinoma could then say they had not been told how this might have been averted.

1. *Lancet*, 1954, i, 409.

ILEOSTOMY

BETWEEN 1928 and 1952, 871 patients were treated for ulcerative colitis at the Lahey Clinic, 413 (47%) being submitted to surgery; during this period the mortality for the ileostomy fell from 18 to 5%. Dr. Neil Swinton gave these figures in a discussion by the proctology section of the Royal Society of Medicine on May 2. He dealt more fully with an analysis, by Colcock and Mathiesen, of their more recent cases: between 1946 and 1954, 307 patients were submitted to ileostomy and colectomy; including operative and late deaths the mortality was 11% (34)—a figure which closely matched that given by Mr. B. N. Brooke of 12% (15 deaths in 126 patients). Dr. Swinton and Mr. Brooke agreed that intestinal obstruction was a common sequel; this complication developed after discharge from hospital in 58 of 307 Lahey Clinic patients and in 9 of Mr. Brooke's 126 patients.

The ileal stoma calls for considerable care at the initial operation, and the technique of its construction is evidently becoming standardised. In all centres the importance of fixation of the mesentery in order to avoid ileostomy prolapse or recession is appreciated. At the Lahey Clinic, as elsewhere, a separate stab-wound is now found to be more satisfactory than the main incision for accommodating the stoma; eversion of the mucosa and direct suture to skin is also becoming widely practised. Complications such as fistula, prolapse, and recession, which render the stoma inefficient, call for operative revision; a further operation for excision of the whole or part of the bowel provided an opportunity for such revision in 9, and a separate operation was required in 4, of 106 cases in which Mr. Brooke did the original ileostomy.

The maintenance of electrolyte balance is of vital importance in reducing mortality after ileostomy. Sodium is lost in direct proportion to the volume output, which may be as much as 3 litres in twenty-four hours shortly after operation, decreasing to 500 ml. later; Brooke has found its concentration to be roughly 300 m.eq. per litre, falling to 150 m.eq. per litre from the long-established stoma. Accordingly sodium requirements can be estimated from the daily volume excreted through the ileostomy.

When the stoma is efficient, so that an adherent bag may be applied to it, patients express satisfaction with an ileostomy, even five years or more after its institution; and they remain at full and arduous work. Nevertheless some maintain that an ileostomy is unnecessary. Mr. Stanley Aylett has undertaken ileorectal anastomosis in 38 patients, of whom 1 died; he has found that the state of the rectum improves after anastomosis, though healing, judged histologically, is not perfect. This finding is supported by the experiences of Mr. Lawrence Abel and Mr. A. Dickson Wright. A sharp division of opinion

has therefore arisen. Those who do ileostomy and excision as a routine admit limited indications for resection and anastomosis (in children, the mentally deranged, and patients with circumscribed involvement of the bowel); but experience has taught them that retention of the rectum, whether anastomosed or isolated, can lead to severe exacerbation of the disease and its remote complications, such as arthritis. Indeed perforation and exsanguinating hæmorrhage have been known to arise in the rectum alone. The Gordon Hospital group have not, however, experienced any such difficulties; they contend that a low anastomosis with excision of the last inch of colon is the secret of success. Time will tell.

RECORDS IN GENERAL PRACTICE

THE latest publication [1] in the General Register Office series, Studies on Medical and Population Subjects, carries forward the account of the study [2] of general-practitioner records begun by Dr. W. P. D. Logan in April, 1951. Before this date attempts had been made by a few general practitioners to observe and record morbidity in their practices; but this study, in which 8 practices in different parts of the country were covered, represented the first coördinated effort of its kind. The inquiry was extended to 2 more general practices, and the latest report includes returns from 13 family doctors, with lists totalling some 37,000, who have recorded each item of service given to their patients.

The results are doubly interesting—both as an example of the use of a new research method in a new research field, and for the information gained on the distribution of morbidity in the community. The item of service rendered by the practitioner, as reflected in the consultation-rate, has been accepted as a valid and useful measure, when considered in relation to the total number of patients at risk. While it is easy enough to record that a consultation has taken place, it is less easy to be certain that the cause of the consultation has been correctly assessed. From the published tables it is clear that the number of medical certificates of all kinds issued in the practices concerned is high, and it may be inferred that many of the attendances and consultations recorded arose from the administrative need of the patient to obtain a certificate of his disability rather than from the disability itself.

The conditions from which the patients were suffering have been classified according to the International Classification, and allowance must be made for the difficulties which were, no doubt, experienced by the Registrar-General's staff in fitting the practitioners' definitions into this pattern. Accurate clinical definitions are seldom possible in general practice, and the analysis may be weakened rather than strengthened by attempts at too strict a classification. In bronchitis, for example, it is clear that the practitioners who took part had their own ideas about the difference between "acute bronchitis," "chronic bronchitis," and "bronchitis" unqualified. It remains to be seen how far agreement can be reached about definitions of disease as first seen in the practitioner's consulting-room, and those concerned with statistical evaluation in this research field have to give close attention to this point.

The broad morbidity picture recorded in the second and third years of the survey confirms the earlier pattern,[2] and it is now possible to rank the causes of illness and disability in order of frequency of occurrence. This study cannot, however, show with accuracy how far the incidence and prevalence of particular conditions are influenced by geographical situation, or, except within broad limits, by type of practice. It is to be hoped that the larger investigation which is being conducted by the College of General Practitioners and the General Register Office as a combined operation will provide more precise and useful information. Much remains to be learnt about the conduct of morbidity surveys, both large and small, and about specific as well as general aspects of morbidity. This work must certainly go on; for an accurate assessment of the community's state of health at any given time can be a valuable starting-point not only for further research but for administrative decision and action.

1. Studies on Medical and Population Subjects, no. 9 (in continuation of study no. 7). General Practitioners' Records. H.M. Stationery Office. Pp. 80. 6s. 6d.
2. See *Lancet*, 1953, ii, 978.

B.M.A. AND G.M.C.

THE qualifications and opinions of its direct representatives on the General Medical Council ought to be a matter of some interest to the profession: but only by the enterprise of two independent candidates, Dr. Whiteside and Dr. Dillon, was the recent election saved from being a formality. Their letter on p. 687 will, we hope, lead the British Medical Association to reconsider its procedure over these elections. Of course, the association may, as before, see no reason for change: it may say, reasonably enough, that like any other medical group it is entitled to propose its own candidates and try to persuade people to vote for them, using its machinery for the purpose. But it should understand that this reply will not in fact satisfy those doctors (both outside and inside the association) to whom it has long seemed that election to the General Medical Council takes place by automation from B.M.A. House. The fact that the representatives chosen have always given long and useful service to the profession is irrelevant in relation to the real issue—namely, whether damage is being done by depriving a democratic process of its meaning. Nobody could expect the B.M.A. to resign its right to nominate candidates; but perhaps thought could be given to some such suggestion as we made six years ago, when we said [1]:

> "As things stand, an independent candidate would have to have quite exceptional claims before he could succeed against the B.M.A.'s official nominees, and we suggest that the elections would be given more reality and usefulness if the B.M.A., instead of asking voters to keep rigidly to an official list, were to present them with a choice of a dozen or more candidates all of whom would be acceptable to the association. If this incidentally improved the chances of an occasional outsider, so much the better both for the G.M.C. and the B.M.A.; for unreal elections are seldom quite healthy."

A RADIOLOGICAL JUBILEE

ON Jan. 6, 1896, the first news reached this country that Professor Röntgen of Würzburg had discovered a remarkable and so far unrecognised form of energy. Little more than three months later there appeared the first journal to be devoted entirely to the new science of radiology: it was called the *Archives of Clinical Skiagraphy* and it was edited by Sydney Rowland, a young graduate of Downing College, Cambridge. From this vigorous ancestor, the *British Journal of Radiology* can claim descent, and this month it celebrates its diamond jubilee. In its May issue, senior members of the British Institute of Radiology survey the achievements of these sixty years. Prof. Gilbert Stead, a distinguished teacher of radiological physics, traces the astonishing progress that has brought us face to face with the awesome discoveries of nuclear physics with their enormous potency for good or evil. Dr. Russell Reynolds, who has studied X rays since Röntgen's day, discusses some of the notable advances in technique which have made diagnostic radiology an increasingly powerful aid to the clinician; and Dr. N. S. Finzi writes, from his long experience, of change and expansion in the methods of radiotherapy. Mr. Cuthbert Andrews manufactured X-ray tubes for nearly forty years and he has interesting things to say about changing fashions in

1. *Lancet*, 1950, i, 627.

apparatus. Dr. A. Lacassagne points to some of the events that took so startling a turn in 1945 when "radiobiology ceased to be a discipline interesting only a small number of experimenters and medical specialists"; and finally Dr. James T. Case, whose radiological experience goes back to 1903, looks briefly at some of the more prominent developments in diagnosis and therapy.

From year to year these exciting happenings have been recorded and discussed in the pages of the *British Journal of Radiology*, which has deservedly won a high place in the world's scientific literature. We wish it, and its editors and contributors, many more successful jubilees.

COLONIAL-SERVICE CANDIDATES FOR THE F.R.C.S.

TOWARDS the end of last year Lord Malvern, F.R.C.S., Prime Minister of the Federation of Rhodesia and Nyasaland, discussed with Sir Harry Platt, F.R.C.S., the position of candidates from the Colonial Medical Service for the final examination for the F.R.C.S. Lord Malvern pointed out that the new regulations require a candidate to complete two years' appointments in recognised hospitals, including six months' service as casualty officer. These regulations virtually preclude any doctor in the Colonial Medical Service from taking the fellowship unless he happens to have worked in recognised hospitals before joining the service.

Subsequently the council of the college agreed that candidates from the Colonial Medical Services who can show that their experience has been at least equivalent to that obtained in two years at recognised hospitals shall be regarded as special cases. In a letter to Lord Malvern, the President suggested that candidates who wish to be considered in this way should provide a brief description of the number and types of surgical patients dealt with by them, together with special references to operative experience and opportunities for close liaison with the hospital pathological department; and that each application be supported by the medical director of the territory. Such candidates will be eligible to apply for examination after two years; but, said the President, in many cases no doubt they will need longer surgical experience.

The discussions and correspondence are to be set out more fully in the *Central African Journal of Medicine*.

SICKNESS AFTER ANÆSTHESIA

SICKNESS after a general anæsthetic is still common enough to leave quite a lot of patients with unpleasant memories of their operation. Knapp and Beecher [1] have described some interesting investigations into this problem, and they have studied the value of certain anti-emetic drugs in a series of patients over 15 years of age who underwent practically every type of operation.

They first differentiated between nausea, retching, and vomiting. Nausea they defined as a subjective sensation of the desire to vomit but without any attempt at expulsive movements. It is often accompanied by such objective symptoms as the secretion of saliva, sweating, an increase in the pulse-rate, and variation in the rate, depth, and regularity of respiration, so that some attempt can be made to measure its severity. Retching and vomiting, both active expulsive mechanisms, are differentiated by the results: vomiting always produces some gastric contents, retching produces nothing; and they can be graded according to the number of times they take place and the duration of the episode.

In Knapp and Beecher's series the sequence of anæsthesia was invariably nitrous oxide, oxygen, and ether; and it was chosen because it seemed likely to lead to more post-anæsthetic sickness of all types than any other combination of agents, and it would therefore provide a reasonable trial for the three anti-emetics. These were dimenhydrinate ('Dramamine'), chlorpromazine ('Largactil'), and pentobarbitone sodium ('Nembutal'). A controlled series of patients was investigated with these agents and with a placebo. The problem of the placebo reactor was eliminated by giving each drug intramuscularly to the unconscious patient shortly before the end of the operation; moreover, the observations and their object were not made known to the patients. All patients were studied closely and continuously for the first four hours after operation, and all were interviewed at the end of twenty-four hours. A large proportion were also observed frequently throughout the whole of this period.

Knapp and Beecher showed that the incidence of sickness of all types after their chosen anæsthetic sequence was 82%. In the placebo group they found that there was no difference in the incidence between the sexes during the first four hours after operation. After this initial period, when the greater part of the ether had been exhaled and the patient was returning, or had returned, to consciousness, women had significantly more symptoms than men. Age did not affect the issue, except that those over 40 seemed to be most helped by an anti-emetic. A further interesting result of the placebo studies refuted the widely held view that intraperitoneal operations—and the consequent visceral palpation—increase the incidence and severity of post-operative vomiting. There was no evidence from these figures that intraperitoneal operations were more likely to produce complications of this sort than non-abdominal operations.

Chlorpromazine proved to be an effective anti-emetic. During the first four hours after operation 50 mg. produced a significant reduction in nausea, retching, and vomiting, and this reduction continued for twenty-four hours. In fact, the 82% incidence fell to 59%. This result was matched during the first four hours only by 150 mg. of pentobarbitone. Dimenhydrinate, in a dose of 100 mg., did not reduce the frequency of these symptoms at any time.

There are other important effects, however, besides anti-emesis. The average awakening time of the patients was prolonged by all three drugs, chlorpromazine extending it by almost an hour. But whereas patients were peaceful and sleepy when they awoke after chlorpromazine, they were much confused after pentobarbitone. Moreover, all drugs in the doses given caused significant hypotension, chlorpromazine being the worst offender. Hypotension appeared about forty-five minutes after giving chlorpromazine and usually persisted for two to four hours, though occasionally it lasted much longer.

In establishing the effectiveness of chlorpromazine as an anti-emetic in these circumstances, Knapp and Beecher have given a timely warning that success can be achieved only at a cost. In attempts to reduce such a common and unpleasant, rather than dangerous, complication of anæsthesia, the risk of less obvious but potentially more disastrous effects must be borne in mind.

1. Knapp, M. R., Beecher, H. K. *J. Amer. med. Ass.* 1956, **160**, 376.

Surgeon Vice-Admiral Sir SHELDON DUDLEY, K.C.B., F.R.C.P., F.R.S., formerly medical director-general of the Navy, died on May 6 at the age of 71.

We also regret to announce the death on May 7 of Major-General Sir CUTHBERT SPRAWSON, C.I.E., F.R.C.P., a former director-general of the Indian Medical Service.

Prof. KNUD FABER of Copenhagen, internationally known for fifty years for his work in gastro-enterology, died on May 2 at the age of 93.

THE INDEX and title-page to Vol. II, 1955, which was completed with THE LANCET of Dec. 31, is published with our present issue. A copy will be sent gratis to subscribers on receipt of a postcard addressed to the Manager of THE LANCET, 7, Adam Street, Adelphi, W.C.2. Subscribers who have not already indicated their desire to receive indexes regularly as published should do so now.

Special Articles

HOME CONFINEMENT *

C. S. RUSSELL
M.A. Oxfd, M.D. Edin., F.R.C.S.E., F.R.C.O.G.
PROFESSOR OF OBSTETRICS AND GYNÆCOLOGY IN THE UNIVERSITY OF SHEFFIELD

Professor Claye, of Leeds, has recently said that "domiciliary delivery deserves to be as dead as the Dodo . . . and already it is in that desirable condition in two of the more civilised countries in the world." [1] He was speaking of Australia and New Zealand. He went on to say that "alone among the more populous countries of the English-speaking group Great Britain remains old-fashioned." Against this opinion may be set the fact that in Holland an efficient home service has been reported by Professor ten Berge [2]; and Dr. L. Roberts, our medical officer of health in Sheffield, has expressed the opinion that the home should be the best place for a woman to have her baby.[3]

The General Practice Review Committee of the British Medical Association were firmly of the opinion that midwifery, and not only home confinement, is an integral part of general practice; and that every possible encouragement should be given to general practitioners to undertake it. About half the practitioners answering a questionary said that they liked midwifery, and wished to increase their experience; a third undertook cases only when specially asked to do so; and the remainder wished to discontinue it.[4]

Maternity Medical Services in the Home

The General Practitioner

Under the present arrangements an expectant mother may, if she wishes, make arrangements for a doctor to provide her with maternity medical services. These services include:

(*a*) Antenatal care throughout pregnancy (including an initial antenatal examination and one at the thirty-sixth week of pregnancy).

(*b*) Attendance at any emergency in connection with the pregnancy if the doctor is summoned on the patient's behalf.

(*c*) Attendance at the confinement if the doctor thinks it necessary or is called in by the midwife.

(*d*) Medical supervision of the mother and child during the puerperium.

(*e*) Postnatal care of the mother, including a pelvic examination at or about the sixth week after confinement. [Why the postnatal pelvic examination is named, rather than an antenatal pelvic examination, is not clear to me. I should have thought the latter was much more important.]

The family doctor may provide maternity medical services for a patient who is on his medical list, and he is paid a special fee for these services. There are, however, certain doctors whose obstetric experience has been approved by the local professional committee. The names of these doctors are shown separately or are specially mentioned in the executive council's list. They are entitled to a higher fee; if in an emergency they are called in by midwives to patients for whom they have not previously arranged to provide maternity medical services, they are entitled to a fee from the local health authority. If the family doctor does not wish to undertake the maternity care of one of his ordinary patients, he will advise her to consult one of his colleagues on the obstetric list.

The mother receives the services free of charge, and the doctor is paid a comprehensive fee by the executive council.

The Local Health Authorities

Besides the services given by general practitioners, the local health authorities have a duty to provide antenatal and postnatal clinics for the regular supervision and care of expectant and nursing mothers. Routine medical examinations and special investigations are undertaken by these clinics; welfare foods and simple medicaments are supplied; detailed advice on mothercraft is given; and where practicable, priority dental care is provided. The clinics are in fact centres for all the educational and social work that is so desirable for pregnant and nursing women. They are held at the maternity and child-welfare centres, where the authority's midwives and health visitors normally work.

Under the 1936 Midwives Act the authorities also have to secure that there are enough midwives in their area. If the mother chooses to have a midwife rather than a doctor, to attend her, the midwife will call in medical aid only if this is required. The cost of this is met by the local health authority. The authorities also have the power, though not the duty, to provide domestic help in households where this is needed.

The Midwife

A word must be said at this stage about the midwife. In the past she was often decried, sometimes with much justification; and even today some people think of her as a modern Sarah Gamp. The Working Party on Midwives remarked that "with past intolerance equally distributed (between doctors and midwives) the way should be smoother today for that integration of midwifery and medicine which we regard as essential to the most profitable employment of both." But encroachment of the doctors they said, is not in itself sufficient to account for the failure of midwifery as a profession for women. Another reason is that, while the public has gradually become nurse-conscious, it has not, at the same time, become midwife-conscious. Victorian prudery which shrouded everything connected with childbirth in an almost impenetrable mist, is not yet dead.

In 1948 a municipal midwife, because of shortage of accommodation, was quartered in a small private hotel. She was requested not to use the general lounge because her presence might embarrass the other guests.

My view is that the woman who is in attendance at labour must be someone of education, who is properly trained, and who has a pride in her work. But how can she have the sense of a job well done unless she is encouraged to take responsibility both during labour and in the antenatal and postpartum period? This encouragement must come from medical men and women, for nobody else is likely to give it to her. I am sure that unless we adopt a proper attitude to the best of our midwives, we shall be laying up for ourselves and for our children a store of trouble. Midwifery recruitment will fall, and a profession which is not yet all that respectable will fall on evil days.

It is quite clear to me that neither the doctor nor the midwife must monopolise the patient but that they must work together as a team; and I accept the Royal College of Midwives' view that "the function of the midwife should be substantially the same whether she is engaged in institutional or domiciliary practice."

The Divided Responsibility

The responsibility for maternity care is divided between those employed by executive councils, local authorities, boards of governors, and regional hospital boards; so we cannot easily agree as to what are the best arrangements for each patient. This need not surprise us for

* Based on a lecture given to the Medico-Chirurgical Society of Sheffield on Feb. 2, 1956.

1. Claye, A. M. *J. Obstet. Gynæc., Brit. Emp.* 1955, **62**, 784.
2. ten Berge, B. S. *Ibid*, p. 785.
3. Roberts, L. Personal communication.
4. *Brit. med. J.* suppl. 1953, ii, 109.

we might not even agree on what constitutes good midwifery. In midwifery, as so often in medicine, we are faced with a dilemma—are we going to trust the natural processes most of the time, or are we going to try to improve on them? If we follow the first course, we shall leave much midwifery in the hands of midwives: if the latter, then we shall get more medical interference, higher episiotomy and forceps rates in primiparæ, and perhaps rather more cæsarean sections.

To allow or insist that the woman largely works out her own salvation may be a reasonable attitude; but as a consultant I cannot get out of my mind the innumerable labour difficulties—some trifling, some serious—that crop up from time to time quite unexpectedly. Indeed, it may be true that normal midwifery only exists in retrospect; and that a normal case can be diagnosed as such only after the various stages of labour have been completed and the patient has completely recovered. Perhaps the young lady was right when, to the question "with whom would you like to be wrecked on a desert island" she replied "an obstetrician." She may have been voicing the opinion of the public, who are making a great demand on hospital confinement and specialist care, because "they know it is safer."[5]

The proportion of live births in England and Wales which took place in institutions, rose from 15% in 1927 to 65% in 1953, though the rise by 11% between 1946 and 1953 was due to a fall in the number of births rather than an increase in the number of institutional beds.

Home Confinement

Regional Variations

There are wide regional variations in the proportion of home and hospital births. In Southport 90% of births take place in hospital; in London the figure is said to be approaching 80%; in some places it is as low as 30%. It would thus appear that with 60% we in Sheffield hold an intermediate position. Parallel with this rise in institutional births there was the striking fall in maternal mortality, largely due to other factors, but possibly in part at least related.

Essential Requirements

Home confinement can without doubt be very safe, but it presupposes that those in charge of the patient know enough about midwifery to recognise and treat danger in good time. We can diagnose only those conditions whose names are in our minds; so we must first be familiar with the possible sources of danger. The high head at term may just be a manifestation of parity; but it may also be a sign of placenta prævia—long before there has been any hæmorrhage—or a pelvic tumour, or a brow presentation, or a hydrocephalic head, or a full-term ectopic pregnancy, or some combination of these abnormalities, just to mention a few. One must have the right thoughts.

Some years ago a senior resident in a maternity hospital was asked on the telephone to take in a midwifery case. He was rather short of beds and thought he ought to ask the general practitioner some questions. He learned that the patient was in mountainous labour, but some of the other replies were so equivocal that finally, in desperation, he asked just what was presenting; was it a vertex? "Oh, no," came the reply, "nothing abnormal like that."

But even with the right thoughts, a correct diagnosis is still unlikely to be made without the appropriate clinical examination. We who work in hospital still have to admit far too many patients who have not had what I would call proper care.

Abnormal midwifery is difficult, even for those with much experience: therefore all who want to practise it should have enough experience to become reasonably competent, and should be willing to learn. But who has this experience, and how is it to be maintained? For the trend towards institutional births has reduced the number of home confinements with the result that general practitioners and midwives are now competing for fewer and fewer cases. Besides this being a possible source of friction, it seriously restricts the opportunity a practitioner gets of keeping in touch with the subject, and tends to make him a less and less suitable person for doing any midwifery at all.

Dr. S. Wand [6] reports that he has recently "led a deputation to a Committee of one of the Regional Hospital Boards in an area where the amount of hospital midwifery was 83%, and the local doctors were complaining that they were not getting enough obstetrical experience." In Sheffield we are not as bad as this. Taking 1953 as a representative year, of the 175 doctors on the obstetric list 136 provided a complete maternity service for one or more patients, and 34 (25%) of these did so for twenty-one or more cases. The experience of 63 doctors not on the obstetric list is that 17 provided full obstetric service for one or more patients; but of these only one did so for ten or more cases.

Review of a Sample of Sheffield Births

Early last year I decided to try to find out just what was happening in Sheffield; and to this end I reviewed the records of every twelfth birth notified in 1953 (the equivalent of one month's cases).

About 30 cases were delivered privately at home or in nursing-homes, and I have no record of a further 29. Of the remaining 600, 310 (51%) were booked for hospital, the rest being equally divided between those booking a doctor in the first instance, and those booking the maternity services of the local authority.

Welfare Cases

From this sample, we know that of the 161 women booked for home confinement by the maternity service of the local authority, 73 wanted a hospital bed; and from this we may estimate that during the whole year about 850 of this group would have preferred to be delivered in hospital. Some of them would not take "no" for an answer, and were eventually admitted.

We may look more closely at this sample. Their parity and age distribution are given in table I.

TABLE I—PARITY AND AGE DISTRIBUTION OF 161 WELFARE CASES IN THE 1953 SHEFFIELD SAMPLE

Parity:					
No. of patients	35	53	35	21	17
No. of pregnancies	1	2	3	4	5 or more
Age:					
No. of patients	8	93	34	21	4
Age	10–19	20–29	30–34	35–39	40–

There was no age record in 1 case.

In regard to their past obstetric history, there were 16 who had had one or more abortions previously, 8 who had had an abnormal pregnancy or labour, and 10 who had had a previous stillbirth or neonatal death. On paper, at least, it looks as though some of these women would have been better booked for hospital confinement; and I believe that, except for the few who did not take the clinic doctor's advice and insisted on staying at home, such an arrangement would have been made if a bed had been available.

The reasons why some were finally delivered in hospital varied: 24 developed some pregnancy or labour complication, 2 got in because their husbands objected to the arrangements, 1 moved to a house where there was a case of open pulmonary tuberculosis, 1 chose a private nursing-home, 2 eventually were persuaded to come in because of grande multiparity and previous stillbirth, and 1 successfully solicited the support of her Member of Parliament.

The question may therefore be asked: "Are these arrangements satisfactory?" Certainly 73 women in this sample were dissatisfied and some exerted great

5. Wrigley, A. J. *Ibid*, 1955, ii, 142.

6. Wand, S. *Ibid*, p. 143.

TABLE II—AGE-DISTRIBUTION OF 160 WELFARE CASES AND 103 DOCTORS' CASES IN THE 1953 SHEFFIELD SAMPLE

—	Age-groups	
	Under 20	Over 20
No. of welfare cases	8	152
No. of doctors' cases	1	102

pressure to get a hospital bed. We who have the responsibility for deciding who should occupy the beds under our care may find ourselves in an uncomfortable situation. On the one hand, we have those who are trying to get another case into hospital, and, on the other, those in hospital management and nursing who have to provide all the non-medical services, and who often want to keep the case out.

Doctors' Cases

The age and parity distribution of those booking family doctor first, but who do not normally have antenatal care at the welfare clinics, is not remarkable, except when their ages are compared with those attending the welfare clinic first (table II). Those under 20 years of age usually went to the clinic first.

Whereas before 1948 comparatively few women booked doctors as well as midwives, under the National Health Service the services of both are available without charge, and over half the women now confined at home book a doctor. He accepts responsibility for the case and may, at his discretion, attend the confinement or leave it to the midwife.

More and more general practitioners are also providing antenatal care for their booked patients, and local health authorities are encouraging midwives to work in association with the doctors. "There is thus at present a transitional stage in which medical antenatal care for domiciliary cases is changing hands" [7]—and, if general practitioners and midwives give a better service under the new conditions, this change is all for the good.

Personal preferences of the patients also play a part. As the wife of a traffic manager said, "Everybody doesn't like to meet what you have to meet at antenatal clinics"—though it is only fair to add that she was equally critical of her own doctor's supervision.

A history of previous abortion, difficulty with pregnancy or labour, or stillbirth or neonatal death, is less frequently encountered in the group booking the family doctors than that which attends the maternity service of the local health authority. Social class probably still largely determines whether the patient goes first to a family doctor or to a welfare clinic, and as social class and reproductive performance are closely linked, there is nothing surprising about this difference. There is, however, one other conclusion that can be drawn from this comparison. The domiciliary midwives in Sheffield, working on their own, have a more difficult type of case to look after than those who only assist the family doctors. Whether we should praise them for their enthusiasm or criticise the arrangement is debatable.

Are More Hospital Beds Required?

The Ministry of Health advises that "unquestionably most multiparæ who have had four or more children would be within the group having medical reasons for admission." [8] If we accept this view, and if we add all patients over the age of forty, all who have had a previous abortion, previous pregnancy or labour difficulty, stillbirth, or neonatal death, we find that 41 of our 161 welfare patients (and 17 patients booked with general practitioners) should not have been booked for home confinement. To these we may add 26 primigravidæ and 32 parous women who wanted a hospital bed; then we may deduct those whose booking arrangements were subsequently changed; and reach the grand total of 95 cases, the equivalent of just over 1100 cases a year.

This figure does not take into account primigravidæ who have booked a doctor, but would have preferred a hospital bed if it had been available, or parous women who have given up trying to get a bed; nor does it take into account the relatively short stay in hospital (not more than ten days) that is all that can be offered to patients who are taken in. This last point is a matter about which some senior hospital midwives hold strong views, maintaining that if only we kept our patients for the full fourteen days, very much would be gained, especially in respect of breast-feeding. For myself, I am not convinced that an extra few days in hospital would make so much difference. What concerns me more is that the rapid turnover in institutions makes it very difficult to keep the risk of cross-infection negligible.

In round figures it may be said that at least 1000 extra deliveries might well take place in institutions, which—surprisingly enough—would bring the proportion of institutional deliveries for Sheffield up to only 70%.

Selection of Cases by the Hospitals

Could the hospitals improve their ways of selecting cases, and could they find beds for these hundreds of women who perhaps ought to come in? No doubt some better selection is possible, but it is extremely unlikely that any substantial adjustments can be made.

I do not altogether hold with the policy of first come, first served; but there is much to be said in its favour. At least it encourages early antenatal care, which allows us to examine patients when their natural state of health is not materially altered by the pregnancy, and to deal with any gross abnormality, such as an ovarian tumour, expeditiously and with the least risk.

My figures show that in the teaching hospitals patients attend early—a practice which must, by modern standards, be encouraged. In the non-teaching hospitals a substantial proportion of cases are booked because of adverse home conditions. If they keep out patients who should come in for more obstetrical reasons, it is just one of the deficiencies of the service. Examining such data as I have, I cannot see how beds can be found for any but a handful of the many hundred cases who really should come in.

Possible Improvements

In my view, all is not well with our maternity services, but to find ways to improve matters is not so easy.

More Maternity Beds

Taking the long view, we should, I believe, press for extra maternity beds; but who is to provide them, and who is to look after them when they are provided?

Taking the first point first, I like the idea of the local authority and regional hospital board providing them as a joint centre for domiciliary midwives and for selected general practitioners. The local authority must be included, for they have many responsibilities for the care of the pregnant woman over and above what the general practitioners have time for. The day-to-day running of such a home could very well be in charge of the local authority midwives who are already doing this in the patient's home; and general practitioners could be appointed to do the day-to-day minor obstetrical procedures. I feel very strongly that some supervision, maybe even control, should be in the hands of the consultants, or at least doctors who have the necessary experience to advise on obstetrical matters.

Aristocracy of General Practitioners

Though we should have extra maternity beds, I do not think that we want more hospital maternity beds—with the full complement of consultants, registrars, and house-surgeons—for an increase in the number of hospital beds would still further dilute the material available to the general practitioners. The arrangement I have suggested would have the support of the Central

7. *Minist. Hlth Rep.* 1952.
8. Selection of Maternity Cases for Admission to Hospital. Ministry of Health circular, Aug. 11, 1951.

Midwives' Board. It would make it possible to train an aristocracy of general practitioners, such as Mr. Arnold Walker, chairman of the C.M.B., has advocated.[9]

Dabbling in midwifery must be discouraged, in much the same way as dabbling in surgery is discouraged; and in fact this is the implication of the general-practitioner obstetric list. I would like to push out of domiciliary midwifery those who are afraid of it, for they have no courage, and those who are not afraid of it, for they have no imagination; those who say there is nothing to it, and are prepared to go and do a case now and then, just to keep their hand in, for they have no understanding; and those who have no interest—for they have no soul.

A prerequisite of a good maternity service is the proper training and selection of doctors, and this training and selection must be in the hands of those with experience of the frightful effects of bad midwifery.

Of course every general practitioner, unless he has had a six-month training in hospital, must make a start somewhere; and I believe that once he is on the Medical Register he should continue to have the right to practise midwifery. This right, however, should be subject to the proviso that he should not be allowed to attend the delivery in the home where conditions may try even the most experienced man. Let our beginner make his beginning in some institution where he will be under the eye and control of more experienced colleagues, and let him graduate to home confinement when he has proved his worth. Similar rules might very well apply to the midwives. In the maternity home too, the doctors and midwives can pool their experience and knowledge, and both be the wiser for it.

Education in Midwifery

Whether or not my view is accepted, and we are to move towards more institutional beds and an aristocracy of general practitioners, matters of medical education arise with which I am very intimately concerned.

Every doctor runs the risk of meeting the unexpected; and we must therefore give the student a good grounding in the anatomy, physiology, and pathology of parturition. We must also teach him how to deal with emergencies—but in no way encourage him to think that without post-graduate training he will be competent to practise midwifery except in an emergency. Teaching in regard to home confinement is now very limited in Sheffield, because for many years the district of our teaching hospital has been so small. This may not be altogether a bad thing, and I have not thought fit to try to change matters. The pattern of obstetric care is changing: more attention is being paid to the education of the expectant mother in motherhood and mothercraft; and—because there are fewer of the abnormalities, such as contracted pelvis and puerperal sepsis, which used to occupy so much of our time—intrapartum care is becoming simpler. So far as the general practitioner is concerned there are only a few operative procedures which he should nowadays practise outside fully equipped homes or hospitals. The episiotomy and its repair, and the repair of perineal tears, low forceps under local anæsthesia, the use of ergometrine for abnormalities of the third stage, are the main treatments required. I myself see no reason why students need go into the patient's home to learn these intrapartum techniques.

Joint Advisory Committee

I have mentioned some long-term objectives. The short-term policy should be the formation of a local advisory committee for midwifery, where the difficulties and problems that confront us can be ventilated from time to time: indeed, it may be argued that this is a pressing matter, for at the moment I know of no way by which representatives of the local authority, the general practitioners, and the board of governors, the regional hospital boards, and the midwives, can be brought together to discuss matters of common interest and responsibility. The difficulty of course is to know who is to set up this committee. Frankly, I do not think it matters which authority does it, so long as it is done.

It is to be hoped that the committee to inquire into the maternity services recently set up by the Ministry of Health will give this and related matters full consideration.

Conclusion

A review of the present position in regard to home confinement in Sheffield suggests that extra beds should be made available for those women who desire institutional care and for those unsuitable for home delivery. There are, according to my estimate, about 1000 of them, and if they were all delivered in hospital instead of at home as at present then the proportion of hospital confinements in Sheffield would be about 70%—a figure which happens to correspond with that advised by the Royal College of Obstetricians and Gynæcologists in its Report on a National Maternity Service (May 1944). A close study of a random sample of those women delivered in Sheffield in 1953 suggests that those seeking hospital beds attend earlier for their antenatal care than those making other arrangements. The present divided responsibility for maternal care is underlined, and a plea is put forward for the formation of local advisory committees.

I wish to thank our medical officer of health, Dr. L. Roberts, and his staff for facilities put at my disposal; Dr. A. K. Black, senior assistant maternity and child-welfare officer, who very willingly spent many hours going over case-records with me; and Mr. J. H. Cargill, clerk of the executive council for Sheffield, for information. I also acknowledge help from Mr. T. E. Durrant, my technician at the time, for work in connection with filling in, punching, and counting the punch-cards used in this survey.

9. Walker, A. *J. Obstet. Gynæc., Brit. Emp.* 1955, **62**, 782.

A GENERAL-PRACTITIONER MATERNITY UNIT

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WOMAN in her labour ought to be confined in the best possible place and under the best possible conditions. At present there are two opinions as to where these are to be found. On the one hand there are those who think that all confinements should take place in a hospital or institution, on the grounds that, even with the most careful antenatal care, unforeseen complications may arise affecting either the mother or baby. On the other hand there are those who claim that for the normal confinement the home and family setting is best for mother and baby and that institutional confinement tends to convert a natural process into a surgical operation. The trend throughout Britain is towards hospital delivery, and in Bristol during the past year only a quarter of all deliveries took place at home.

The scheme we put forward is one which we consider combines the best features of hospital and home care. Moreover, it ensures that those concerned with the welfare of the mother—i.e., the family doctor, midwife and, when necessary, the obstetric consultant—will supervise her during her labour. Throughout her pregnancy the mother will have been under the care of her own doctor and will have been seen regularly at his own surgery or

with the district midwife at one of the local-authority clinics. In Bristol general practitioners can already undertake the antenatal care of their own patients, whether booked for hospital or home confinement, in local-authority clinics. The scheme is closely linked with the consultant service, obstetricians from the main hospital centres holding regular sessions at each clinic, to which patients can be referred by the general practitioners. The local authority's medical officer covers the antenatal supervision of mothers whose own doctors do not practise midwifery. The district midwives share with the doctors the antenatal care of mothers booked for domiciliary confinement. The expectant mother is thus able to attend at one centre near her home, where all members of the obstetric team are available (Redman and Walker 1954).

General Outline

The scheme we have in mind would require a block of labour-wards attached to a maternity hospital. Each would consist of a suitably heated room with simple equipment such as would be found in a good household which has been prepared for a confinement—i.e., bed, cot, wash-hand basin, and so forth. Except for preparing and cleaning the room, no extra staff would be needed. When the woman went into labour she would inform the district midwife who would arrange for her admission to this labour-ward and accompany her there. If the midwife undertook pupil-training, a pupil would also attend. The patient would not be left by herself at any time during her labour. Her own doctor would be informed at once and, with the midwife, would be responsible for the conduct of the case. When the mother had been safely delivered and had recovered from the effects of her labour, she would be taken home by ambulance with her baby, accompanied by the midwife. Nursing would then be continued as for a home confinement. This scheme would have the following advantages :

1. The delivery would be conducted under ideal conditions. If any complications should develop, all the resources of the maternity hospital would be easily available.
2. The mother would have a sense of reassurance knowing the resources of the hospital were there if wanted.
3. She would be attended at her delivery by her own doctor and midwife. Continuity of care and personal relationship is extremely important. As one mother said " I should feel more confident if I knew I was being looked after by people who not only knew my case but knew me."
4. A relative or friend would be allowed to accompany the mother, if desired.
5. The risk of exposure of mother and baby to hospital cross-infection would be greatly reduced.
6. Most mothers in hospital begin to fret after the first few days and we feel sure they would be glad to go home so soon.
7. There would be considerable saving of public money.

Discussion

With the excellent transport now available, there is no clinical reason why most mothers who have had a normal confinement should not go home soon after delivery. Owing to shortage of beds this sometimes happens now, and no harm follows. We see little difference between transporting the patient by trolley from a labour-ward to an ordinary ward and transporting her from the labour-ward to an ambulance, under cover, and so to her own home. In fact, we believe that a return home so soon after delivery is preferable to discharge from hospital on the 4th or 5th day. If the patient goes home at once, arrangements will certainly be made for domestic help, but if she goes home later she may well have to start household duties long before she is fit.

The time for sending the mother and baby home will, of course, vary and must be left to the judgment of the team. It would normally be about the time when a midwife would leave a case after completing a home delivery. The midwife would have to give extra time here to see the mother and baby safely home and comfortably settled. A similar procedure of immediate return home has been reported in a fairly large series of hernia repair operations with excellent results (Farquharson 1955).

The incidence of hospital cross-infection, especially with resistant strains of staphylococci, is a matter of concern and maternity hospitals and their attendant nurseries are not immune. In the labour-units we have described, neither mother nor baby would normally come into contact with hospital personnel or other patients.

There would have to be more strategic planning of the actual confinement, and detailed arrangements for the reception and care of mother and baby on their return home would need to be made well in advance. The scheme would need more domiciliary midwives and a larger and more flexible home-help service but it would still cost far less than a greatly enlarged maternity unit or a new maternity hospital. Midwives in maternity and general-practitioner hospitals could be released to work on the district.

In our opinion these cases must be regarded as home confinements and qualify for the full maternity grant. After all, the grant is intended to cover not the actual delivery but the puerperal period when home help is most needed. We also think that consideration should be given at a national level to reducing the charges made for the home-help service in maternity cases. The differential grant of £4 does not cover the cost of a home-help for the lying-in period, except for a few cases who qualify for a reduced charge under existing assessment schemes. We think it unfair that the mother delivered and nursed in hospital should have this economic advantage over her sister who is nursed in her own home.

If the majority of mothers came to be delivered in these G.P. labour-wards, arrangements for training medical students and pupil midwives would need modification. We see no reason why training should not be carried out under the ægis of this general-practitioner/midwife team. We do not think it unkind to say that many of us are not happy about the way some medical students have floundered through the district-midwifery part of their training. In the scheme we propose the young student or pupil midwife would be closely supervised at each delivery until he or she were confident enough to be in charge of a case.

The scheme would be best suited to large towns, but there is no reason why it should not apply to the less scattered rural communities. The labour-wards would have to be opened where accommodation at a maternity hospital could be found and according to population requirements. Where there is already a maternity hospital we suggest that one of the wards could be divided into rooms. All dressings, instruments, and the like would be provided by the hospital. Put in homely language, we should be simply renting a room for a short time. The conduct of the case would be in the hands of the G.P.-obstetrician/midwife team, with or without a pupil, and be completely outside the jurisdiction of the medical or nursing staff of the hospital. The scheme would deal only with " normal " confinements. Abnormal cases booked for hospital and emergencies would pass out of the care of the general practitioner or the local authority on admission to hospital. Some " social cases," where home conditions were unsatisfactory, would need to be retained in hospital for the lying-in period and would therefore come under the supervision of the hospital staff.

The original intention of the " obstetric list " was that midwifery should be practised by a limited number

of general practitioners particluarly experienced in the work. Unfortunately this has not always worked out in practice, and for the most part it is open to any general practitioner to undertake midwifery if he so chooses. We should like to see this work restricted to keenly interested practitioner-obstetricians who, though probably with smaller lists, would continue in general work so as to remain in touch with the whole field of general practice. Family doctors not doing maternity work should refer their cases to these colleagues. A group practice would almost always include at least one practitioner-obstetrician. Future entrants to the "obstetric list" would gain their experience and qualify for admission to the list by association with practitioner-obstetricians.

Where local-authority medical officers continue in the service they should be given the opportunity to conduct their midwifery practice on the same terms as general practitioners—i.e., he, or she, must be able to visit the expectant mother at home where necessary and attend the confinement in this labour-ward unit.

In any maternity scheme the needs of the mother and baby are paramount. For some years now it has been our experience that mothers approach their confinement with much less fear than formerly. This is due, we feel, to over-all antenatal supervision as well as instruction in relaxation. We make a point of telling the mother, by discussion, film strips, and diagrams, as much as we think she ought to know about the course of labour and assure her that we will be with her when she needs us. All the same there remain the hazards of any normal delivery, and many mothers are aware of these. It may be said that "the only normal delivery is the absolutely normal one which has just been completed."

We feel that our scheme would have a wide appeal, for the mother would know that she could be delivered in a place where all the resources of a maternity hospital were readily available should things go wrong, and yet be able to return home immediately for her subsequent care.

We should like to record our appreciation to Dr. R. C. Wofinden, medical officer of health, Bristol, for his advice and constructive criticism in the preparation of this article.

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Redman, T. F., Walker, S. C. B. (1954) *Brit. med. J.* ii, 41.

HOSPITAL FARMS

IN his reports [1] on the National Health Service accounts for 1954–55, the Comptroller and Auditor-General, Sir Frank Tribe, again refers to hospital farms and market gardens. An expert committee reviewed the farming activities of 190 hospitals with 40,000 acres of farmland and nearly 4000 acres of market gardens. They found that, in a number of instances, farming had been developed for its own sake, "and the maintenance of pedigree herds and dairy farming had become a major preoccupation with some hospital authorities." In the light of the committee's report, the Ministry of Health advised hospitals that they had no authority to run farms except in so far as they were an essential part of hospital management, and they asked hospitals to review their farms. By Oct. 31, 1955, 207 farms had been surveyed by regional boards. Decisions had been reached about the future of 126, and it had been decided that farming should cease at 47 hospitals and be reduced at a further 38, involving the disposal of 17,598 acres of land.

Trading accounts for hospital farms and gardens in England and Wales in 1954–55 showed an excess of income over expenditure of £60,000. Farms showed a surplus of £140,000 and market gardens a deficiency of £80,000 (these figures do not include small market gardens). In Scotland farms recorded a net profit of over £58,000, but market gardens showed a loss of just under £10,000.

1. National Health Service Acts, 1946 to 1952. Accounts 1954–55. H.M. Stationery Office. Pp. 41. 2*s*. 6*d*. National Health Service (Scotland) Acts, 1947 to 1952. Accounts 1954–55. H.M. Stationery Office. Pp. 26. 1*s*. 9*d*.

In England Now

A Running Commentary by Peripatetic Correspondents

ART critics have come under the brush at Burlington House this year. Sir Alfred Munnings leads the way. Besides the usual reliable nags from his stable, he has entered a likely outsider—his witty but good-natured satire on modern art, *Does the Subject Matter?* Of his circle of critics, I got the feeling that Munnings was backing the dog. Mr. A. R. Thomson urbanely offers us *The Selection Committee 1955* in an entertaining and elegant crescent before a red curtain. But with Mr. Richard Eurich the gloves are off and his version of *The Critics* is as harsh as it is accomplished.

There is no formal royal portrait of the year, and the place of honour is given to a large study of *The Duke of Wellington* in ducal robes. People seemed to be turning with relief from its uncertain grandeurs to the smaller portraits, such as Sir Gerald Kelly's blue and grey picture of *Sir Geoffrey Jefferson, M.S., F.R.S.*, who sits at ease looking out sleepily yet shrewdly from beneath heavy lids. Though Mr. A. R. Middleton Todd has painted *Lord Adrian, O.M., F.R.S.*, in academic robes, he too sits at ease before a not too tidy bookcase, looking over his well-known half spectacles. In Mr. Frederick Elwell's picture, *Mrs. Rosemary Adams, F.R.C.S.*, sits in a draped dress of rich red before a small open desk. Mr. Eric Kennington's effective pastel of *Sir Russell Brain, P.R.C.P.*, hangs in the select small south room. Among the sculpture there is the now almost inevitable head of *The Late Sir Alexander Fleming, F.R.S.*—this time a less familiar one of him in his early 50s—and a bronze of *Dr. Roger Bannister*, by Josephina de Vasconcellos. Mr. Allan G. Wyon's silver medallion will later be a suitable prize for meritorious anatomy students at Leeds.

Sir Winston Churchill, who has been an honorary R.A. longer than he has been an honorary F.R.C.S., has two pictures hung, including a dark but attractive interior of *Sir John Lavery's Studio*. After-dinner speakers will turn with a shudder from Mr. Ruskin Spear's *Unaccustomed as I am*. But surely no medical dinner was ever half as horrible as this macabre postprandial occasion.

* * *

Now that automation is so much used in anæsthesia, I am occasionally able to contemplate phenomena not directly concerned with the unconscious patient in front of me.

I have two long orthopædic sessions each week and here some curious problems have so far eluded solution.

A popular method of securing a bloodless field in limbs is to apply an Esmarch's bandage and then to inflate a modified sphygmomanometer cuff, after which the rubber bandage is removed. On the pressure-gauge of the instrument are two red lines at 250 and 500 mm. Hg respectively marked "arm" and "leg." Now why use a pressure considerably higher than the systolic blood-pressure and why use twice this pressure on the leg? I have posed these queries to two orthopædic surgeons, a physicist, and a hydraulic engineer, and they all gave different answers.

I pass over briefly the peculiarities of orthopods as to the time for which tourniquets or their equivalents can be applied. One is insistent that I remind him when twenty minutes have elapsed in the case of an arm while his opposite number seems quite annoyed if I venture to remark that an hour has gone by.

Even more remarkable is the attitude towards asepsis. In the private wing of a London teaching hospital, if a general surgeon drops an instrument it is boiled for ten minutes by the clock and handed back. If, however, an orthopædic surgeon does the same thing in the same theatre, twenty minutes elapse. At an equally famous London teaching hospital, they boil dropped instruments for two minutes "just to make sure" as their professor of bacteriology has shown that thirty seconds is ample provided that the water in the steriliser does not go off the boil when the instrument is dropped in.

It is all very puzzling and I think that in future I must keep my mind on really simple matters of anæsthesia, such as the mode of action of chlorpromazine.

* * *

She was 74. She had severe claudication. When she was admitted to hospital there had been small areas of gangrene on one foot, but these had now separated and she was up and "pottering." Soon she was to be discharged and sent home.

Let me see Mrs. ——, you live by yourself don't you?

No doctor, with my sister.

How old is your sister?

She's 80.

Then I suppose she is in no state to look after you.

Oh, yes, she is, doctor, but I have to look after her because she goes out to work.

Goodness gracious, at 80. What does she work at?

She works on a capstan.

Part-time?

No, whole-time. We get up at half past five in the morning to get her off and she gets back to her supper at seven.

Well, could you get a home help to come in each day?

But who's going to pay for it, doctor? I've only my pension.

What about your sister? She earns big money.

So she may, doctor, but she saves for her old age.

* * *

First Child ($5^1/_2$) has just been to his first film. My husband selected *The Wizard of Oz* as suitable, enjoyable, and not terrifying. I was assured there were no witches and it was all lovely colours and mild as milk. So I got a school-teacher friend to come too, with her carefully brought-up little girl ($4^1/_2$). We arrived just after the beginning, which was monochrome and about a farm in Kansas. The children didn't seem to mind, though we wondered if it was the right performance. After what seemed a long time to us and $^1/_4$ lb. mixed sweets to them, glorious colour sequences ran riot over the screen, and the magic word "Oz" was mentioned, so we knew we hadn't made a mistake (or had we?). From then on there was hardly a witchless moment, not to mention clouds of sulphurous smoke, bangs, orange flashes, and scarlet-mouthed hydrocephalic familiars. First Child crouched very close to me, completely absorbed, refusing stoutly to come out, though frankly admitting terror. $4^1/_2$ was made of sterner stuff and bounded up and down, inexorably questioning her mother. The songs bored both of them, and finished the sweets. I kept assuring my son that all would be well, as it always was in films, but he reminded me vividly of a rabbit too near a stoat. The whole party was relieved when the worst witch was melted, and $4^1/_2$ was hurried off to seek a different kind of relief. To the strains of *Home Sweet Home*, with the heroine mysteriously restored to her Kansas farm, we left in good order to catch our long-past-bedtime bus. $5^1/_2$ said it was a smashing film, and of course he was frightened, but he wouldn't have missed it for anything. $4^1/_2$ said were there any more liquorice allsorts. My friend said she didn't *think* it would do any lasting harm. I said I'd have a word or two with my husband on the subject of nightmarish films for impressionable children.

Guess who had the nightmare? $5^1/_2$ and $4^1/_2$ slept peacefully till morning. "I wish you'd stop kicking and screaming about witches," my husband said irritably. "Heaven knows what you'd be like after an A film!"

* * *

Not every diabetic's mind
Is mathematically inclined,
(Nor, parenthetically, is mine):
And so we seek a standard sign.
No wonder, then, our reason teeters
Between ccs and millilitres
Between the barrel and the label
There mounts a metric tower of Babel;
Yet since it gets beneath our skin
We must inject our insulin:
So, Makers, though our ampoule smiles
Approve your standard-colour phials,
However lunatic our fringe
We must employ a marked syringe—
So make your vitreous incisions
Not, please, in units, but divisions.

Letters to the Editor

G.M.C. ELECTION

SIR,—We were the two younger and unsponsored candidates at the General Medical Council election. Each of us stood because he wished to represent the active practitioners of the National Health Service, who are at present inadequately represented on the General Medical Council. We had lunch together and then attended the count at Hallam Street, being the first candidates to do so in living memory. We should like to take this opportunity to thank Mr. W. K. Pyke-Lees, the registrar, and Mr. C. O. Weston who showed us the electoral machine in action. This was of exceptional efficiency, and we were both much impressed by it.

Our abiding memory, however, will be of the way in which the whole might of the British Medical Association was thrown into the fight to keep us off the council. There were two paragraphs in separate issues of the *British Medical Journal* extolling B.M.A. candidates, and about 45,000 members of the profession in England received two well-timed circulars. We estimate that the cost of this was some £2000 of Association money. Neither of us was in a financial position to act likewise, nor do we agree with the principle of canvassing by pressure-groups.

We still hold that the direct representation on the General Medical Council should be representative of the profession at large, not excluding the younger groups. We therefore believe that reform of the electoral procedure is necessary. We hope that our candidature will have pioneered the way towards this. Finally, we should like to thank the doctors who voted for us with 16,000 votes. Perhaps we shall have better luck and a fairer chance next time.

Herne Bay, Kent. C. T. H. WHITESIDE.

Rugeley, Staffs. STANLEY DILLON.

FATS AND DISEASE

SIR,—Like many of your readers, I am sure, I wonder whether this work on E.F.A.[1–3] may be a major breakthrough into the explanation of coronary heart-disease. I have been mulling over the data on fat consumption and "atherosclerosis" for years, but have always come away with the feeling that, though there *must* be something in it, the story as usually told—whether in terms of total fat in the diet, the proportion of calories derived from fat, or animal *v.* vegetable fat—just would not stand up. It may well be, as is now suggested, that what we were getting was a blurred version of a more complicated story that includes the ratio of E.F.A. to other fatty acids.

Permit me, therefore, to make two observations that may help to clarify future discussion, now that an additional factor has been introduced. First, there is the common idea that the prevalence of coronary heart-disease in different countries is in step with what is known of their fat consumption. Second is a question about possible misconceptions in current research.

The facts about prevalence are mainly of two kinds: mortality-rates produced in the various national offices of vital statistics; and the results of ad-hoc clinical surveys. As regards the former, the frequent statement that total fat in the diet is closely correlated with mortality from ischæmic heart-disease is incorrect, at any rate for comparable Western peoples. There is wide variation in the certified mortality from coronary heart-disease among countries with very high fat diets. Thus

1. Bronte-Stewart, B., Eales, L., Antonis, A., Brock, J. F. *Lancet*, Jan. 14, 1956, p. 101.
2. Sinclair, H. M. *Ibid*, April 7, 1956, p. 381.
3. Bronte-Stewart, B., Antonis, A., Eales, L., Brock, J. F. *Ibid*, April 28, 1956, p. 521.

Denmark reports only half the mortality (taking the male rate in middle age as the most reliable indicator) of Finland, or Canada, or New Zealand.[4] At probably a somewhat lower, though still high, level of fat consumption, the Stockholm rate is only half that of Edinburgh, or Aberdeen, or Newcastle, or Cardiff.

Our own experience of fat-rationing, starting from 1940, is also adduced in support; but, again, the available data do not fit. There was a decline of mortality at the beginning of the war, but the climbing pre-war trend was resumed in 1943,[5] although fat restriction was continued for several years longer and reached its greatest severity (such as it was) in 1947. If margarine and kindred products are the villains, the story might hang together a bit better; because, of course, substantially more margarine was eaten from early in the war.[6 7] In that case, why the decline of mortality in 1940–42? The record is anything but straight; and it is good to know that we are soon to have first approximations at least to the facts about E.F.A. consumption in this country during recent years, and not only courageous extrapolations from a few of the figures.

The war-time experience of Norway is probably the most quoted evidence; and once again the statistics are rather different from the common impression of them. The actual decline in cardiovascular mortality in Norway is difficult to estimate, and it was salutary to find when I visited there last autumn how much less excited the Norwegian experts were about it than others. The fall among men seems indeed to have started *before* food shortages were at all serious [8–10]; it was seen in several cause-groups; and it affected young persons—i.e., non-coronary cases—more than the middle-aged. Moreover, it occurred in a period when not only was there restriction of total calories and drastic reduction of fats, but also several other factors which are probably related to the frequency of ischæmic heart-disease were all being influenced in a favourable direction: smoking, habitual physical activity, diabetes, and possibly blood-pressure levels and body-weight. Those interested might refer to Professor Strøm's fascinating account [10] of Norway's war-time increase in infectious diseases; and the decline in dental caries, childhood enlargements of tonsils and adenoids, maternal mortality, stillbirths, infant mortality, various cancers, suicide, and schizophrenia and other psychiatric disorders.[11] There almost certainly was some fall in coronary heart-disease during the Occupation: a reasonable estimate might put it in the order of 20–25%. (How unexpected if the substantial increase in the eating of fish and fish products was in some measure responsible. But to claim this, or the interference with hydrogenation, as *the* cause in what was so obviously a multifactorial situation, is surely to court the errors of the over-simple tale about fats.) As interesting as this decline is the fact that pre-war Norway, although enjoying a high-fat diet, seems to have had rather *low* mortality from coronary heart-disease; and after war-time food restrictions were lifted there has again been a return to relatively *low* rates, low at any rate for a "Western" country—little more than half those of Scotland or a third of New Zealand's.

I am not suggesting that national death-rates certified to coronary heart-disease should be used in considerations of the ætiology of this condition or, indeed, that they have any value; and I am well aware that diverse juggling with the data can yield diverse results. I am only making the point that if the data are used at all, it should be with greater circumspection. In this regard it may be fair to place on record that it was not the vital statisticians, epidemiologists, or social-medicine workers in general who first engaged in these exercises; and their hesitation was only partly due to their well-known indolence. With much experience of the snares of time-series and international comparison in well-tilled fields like infant mortality and tuberculosis their reluctance was perhaps understandable.

The other principal source of information about the experience of different countries, and at different times, is the ad-hoc field survey. These, however, are only at their beginnings. The difficulties of standardising techniques, population samples, &c., are enormous, for the peoples that need to be studied often differ in such a great many respects. Keys himself [12] is pioneering a truly mid-century approach to these matters.

The second observation I should like to make is this: it would help to clarify ideas, and to make communication easier, if there was less premature simplification of this complex of problems into the measurement of serum-cholesterol, or β-lipoproteins; and if the term "atherosclerosis" were not used indiscriminately to include anything from experimental fatty lesions in the aorta of rabbits to the whole of the natural history of ischæmic heart-disease in man. This widespread contemporary woolliness has had unfortunate results. It is a reasonable proposition that several causes and several mechanisms are involved in the human disease, and it is conceivable that some of them are not related in simple fashion to serum-cholesterol, &c. But it is a fallacy to suppose that this automatically renders them unimportant. The U.K. pathological survey which we are now analysing seems to suggest that, in terms of morbid anatomy alone, different factors may operate at different stages in the long journey from flecking of the coronary arteries to the fatal heart-disease—age at one stage, "social class" at another, physical activity of work at yet a third, and so on. However that may be, the notion of "multiple causes" is crucial for preventive medicine, if only because it would be more sensible to propose to the people that they should modify their diet *and* other ways of living (should such a programme appear hopeful) than to clamour for a revolution in diet alone. Moreover, it may be easier to control the modern "epidemic" of coronary thrombosis than the more ancient coronary atheroma.

The main consequence of the prevalent misconceptions has been the relative neglect of clotting and thrombosis in modern research. There are the strongest indications that thrombosis in human coronary arteries should be a major focus of investigation: the historical evidence which suggests that coronary atheroma has not increased in recent years, though thrombosis and infarction have [13]; the observation which can be made by any pathologist who views his material in epidemiological terms that only a minority of men with much or severe coronary atheroma suffer infarction, at any rate in middle age (and also that some with little atheroma can have serious obstruction and ischæmic heart-disease); the precipitate nature of such decline as did in fact occur in war-time Norway, and the striking fall in thrombosis—embolism observed in their hospitals during those years [14]; Duguid's and related work; and the difficulty of inducing thrombosis and infarction on the experimental atheroma of

4. Statistics kindly supplied by national offices of vital statistics, or from W.H.O.
5. Registrar-General's Statistical Reviews of England and Wales, 1938–54. Tables, part 1. Medical. H.M. Stationery Office.
6. How Britain was Fed in War Time. H.M. Stationery Office, 1946.
7. Domestic Food Consumption and Expenditure, 1950. H.M. Stationery Office, 1952.
8. Strøm, A., Adelsten-Jensen, R. *Särtn. Nord. Hyg. Tidskr.* 1950, **31**, 123.
9. Strøm, A., Rygh, A. *Särtn. Nord. Med.* 1952, **47**, 396.
10. Strøm, A. The Influence of Wartime on Health Conditions in Norway. Oslo, 1954.
11. Ødegard, Ø. *Acta Psychiat., Kbh.* 1954, **29**, 333.
12. Keys, A. *Minn. Med.* 1955, **38**, 758.
13. Morris, J. N. *Lancet* 1951, i, 1, 69.
14. Dedichen, J., Strøm, A., Adelsten-Jensen, R., Closs, K. *In* Factors Regulating Blood Pressure: Transactions of the 5th Conference, Josiah Macy, jun., Foundation. New York, 1951.

animals. There has been some improvement in the last few years in the distribution of research, as you describe (April 28), but the balance is still not redressed.

M.R.C. Social Medicine Research Unit, London Hospital, E.1. J. N. MORRIS.

SIR,—I was much interested in your leader of April 28 and in the admirable paper by Dr. Bronte-Stewart and his colleagues which appeared with the critical letter of Prof. Ancel Keys in the same issue. I feel that the average medical man might be somewhat bewildered and confused by the sudden weight of evidence incriminating our until recently much-praised Western diet for the rapid increase in the incidence of coronary-artery disease. It is perhaps pertinent, therefore, to recall that when I first presented some of the fundamental evidences of the dietary theory of coronary heart-disease in your columns,[1] they provoked such adverse criticism that Professor Keys felt obliged to intervene.[2] Now, less than two years later, the question is not any more whether the increase of the fat calories as a percentage of total ingested calories is responsible for the increased incidence of coronary atherosclerosis, but whether all kind of fats are equally responsible for it.

I was greatly intrigued by some of the "fascinating speculations" of Dr. Sinclair (April 7).

I have no doubt that he is on sound ground when he raises the question of essential fatty acids (E.F.A.) with reference to coronary atherosclerosis. I am, however, afraid that he tried to cover too much ground in his letter. As Professor Keys says, the idea that deficiency of E.F.A. in the diet may be related to atherogenesis is not new. The vexed question of vegetable versus animal fats, especially as far as their influence on hypercholesteræmia is concerned, cannot yet be decided with certainty. Much work has been done in recent years, but, despite the interesting work of Groen et al.[3] and Donath et al.[4] on vegetarians, both Hardinge and Stare [5] and Mayer et al.[6] in their controlled experiments still came to contradictory results. More recent work, however, mainly by Ahrens,[7] Kinsell,[8] and especially Malmros,[9] seems to indicate that not all kinds of vegetable fat have the same lowering effect on serum-cholesterol. Using corn oil, which contains about 57% of linoleic acid, Professor Malmros reduced the blood-cholesterol level in 8 patients with familial hypercholesteræmia from 450–500 mg. per 100 ml. to about 300 mg., and kept some of the patients on that level for two months.[9] I repeated this experiment, and I did indeed lower the cholesterol level substantially in a healthy person, and in a hypercholesteræmic patient. I doubt, however, whether our patients will be prepared to face this ordeal unless we can find less repulsive carriers of E.F.A. Dr. Sinclair's observation [10] on increased permeability, and his emphasis on the link with vitamin B_6, might help in the explanation of some of these results, although to prove any, even relative, deficiency of E.F.A. would need a great deal of additional research.

I quite agree with you, Sir, that the great importance of the admirable work of the Cape Town group lies in the assumption that any dietary factor which raises, or lowers, the β-lipoprotein level in the blood will also raise or lower the liability to myocardial infarction. Incidentally this assumption, by implication, was clearly expressed several years ago by others.[11 12] I am, however, much more impressed by the systematic and careful work of Dr. Bronte-Stewart and his colleagues in following up the fluctuation of blood-lipids after feeding "on many occasions malodorous oils" for up to 172 days. Furthermore, they are most cautious in the interpretation of their results. Unfortunately balance studies of fæcal fats have been only sporadically carried out so far, and I am looking forward to seeing the results of more detailed studies, as promised in their paper, for the following reason.

According to the authors the physical activity of the volunteers was minimal throughout the study. Their fig. 1 indicates that a male Bantu, aged 37, with a body-weight of approximately 140 lb., having consumed as much as about 2200–2300 calories daily, lost around 7–8 lb. of weight in seven weeks. Another male Bantu, aged 65, with an initial body-weight of only 110 lb. (figs. 2 and 7) on a daily calorie intake of about 2300 lost weight in the first month, and regained his lost weight on an average daily intake of about 2600 calories in the second month; he gained afterwards slowly less than 5 lb. in weight in the following two months on a 2500–3000-calorie diet, and gained again less than 5 lb. in weight in the fifth and sixth months averaging about 3000 calories daily (fig. 7). This 65-year-old man was certainly grossly overfed with 50–60 calories per kg. body-weight on minimal physical activity, and gained only about 8 lb. in six months. These two weight-curves, which can be read only approximately, strongly suggest that a considerable part of the ingested fats was not fully absorbed and utilised. If this assumption is correct, the fat calories of these volunteers were in reality considerably lower than the calculated 36%, 45%, and 60–70%. It may also be of some interest that most of the weight gained by the 65-year-old Bantu coincided with the two periods when ten eggs were added daily to his diet. I am confident that the Cape Town workers will be able to clarify these points soon.

We have to keep in mind that the dietary theory of atherogenesis, as it stands at present, was only elaborated in the past few years, and I fully agree with you that more research is urgently needed and that in this type of research the unit of time is the decade. But the death-roll from coronary-artery disease is still rapidly increasing. Are we going to wait for another decade to take the appropriate measures? Whilst the elucidation of the influence of E.F.A. on atherogenesis appears to be, at this moment at least, as important as that of the sex hormones,[12 13] are we going to condemn our patients to substitute E.F.A. for butter and bacon or demasculinise them with female hormones? I, myself, have had my share of corn and wheat-germ oil, and, like Professor Keys,[2] I am convinced that, unless the E.F.A. can be made much more palatable (without hydrogenation), most patients in this country will prefer a diet substantially reduced in those fats which they are used to (or which they like). In other conditions it has been shown in long-term observations that such diets work quite satisfactorily in practice.[14]

London, W.1. Z. A. LEITNER.

SIR,—I am sure I am not alone among public-health medical officers, now liberated from preoccupation with infection and gravely concerned at the ravages of degenerative disease, in regarding the last few issues of *The Lancet* as momentous.

First we are treated to Dr. Sinclair's fascinating postulations on the relationship of fats and disease. This is closely followed by the interlocking findings in the publication of Dr. Bronte-Stewart and his colleagues and your own thoughtful commentary in the same issue.

Sinclair's work is evidently continuing, but it appears that he has been moved to issue what amounts to an interim report in a genuine endeavour to assist in halting us on the alarming and slippery slope of premature degeneration.

1. Leitner, Z. A. *Lancet*, 1954, i, 1078.
2. Keys, A. *Ibid*, 1954, ii, 37.
3. Groen, J., Tjiong, B. K., Kamminga, C. E., Willebrands, A .F. *Voeding*, 1952, **13**, 556.
4. Donath, W. F., Fisher, J. A., Meulen van Eysbergen, H. C., De Wijn, J. F. *Ibid*, 1953, **14**, 153.
5. Hardinge, M. G., Stare, F. J. *Amer. J. clin. Nutr.* 1954, **2**, 83.
6. Mayer, G. A., Ford Connel, W., de Wolfe, M. S., Beveridge, J. M. R. *Ibid*, p. 316.
7. Ahrens, E. H., Tsaltas, T. T., Hirsch, J., Insull, W. *J. clin. Invest.* 1955, **34**, 918.
8. Friskey, R. W., Michaels, G. D., Kinsell, L. W. *Circulation*, 1955, **12**, 492.
9. Malmros, H., Wigand, G. *Minn. Med.* 1955, **38**, 864.
10. Basnayake, V., Sinclair, H. M. *J. Physiol.* 1954, **126**, 55P.
11. Barr, D. P. *Circulation*, 1953, **8**, 641.
12. Oliver, M. F., Boyd, G. S. *Brit. Heart J.* 1953, **15**, 387; *Ibid*, 1955, **17**, 299.
13. Leitner, Z. A. *Proc. R. Soc. Med.* 1955, **48**, 672.
14. Leitner, Z. A. *Voeding*, 1955, **16**, 107.

There can be no doubt that food is far and away the greatest single controllable factor affecting health and disease, but existing knowledge can influence the picture only if effectively applied to the community by means of health education.

You point out that research into the origins of degenerative diseases in man is beset with difficulties. Not the least of these are encountered in the planning, conduct, and interpretation of controlled human feeding experiments. A consequence of this is that even potent nutritional factors affecting human health may continue for a very long time to elude demonstration under conditions which will satisfy the statisticians. Moreover, such experiments as have been attempted have often of necessity been carried out under abnormal conditions and for too short a time. Results have been inconclusive or even contradictory so that the health educator finds it difficult to be decisive enough to be effective.

The most striking improvements in the national health during recent years have been in the younger age-groups of the community. Whilst in no way minimising the achievements of curative medicine, the fact remains that the children of today are better specimens largely because of the adoption by the community of healthier ways of living encouraged by health education and assisted by improving social conditions.

I personally have not the slightest doubt that far and away the biggest factor has been the acceptance by the community of the so-called "balanced diet," reinforced by the school meal.

Careful inquiry in the home as to what constitutes this "balanced diet" all too often causes me grave concern, but the fact remains that even the orthodox 20th-century teachings on fats, carbohydrates, proteins, vitamins, and minerals, &c., has achieved a notable improvement on the fodder meted out to the average family fifty, thirty, and even twenty years ago. As a direct consequence, and associated with measures to improve the cleanliness of food and milk supplies, we now raise children who mostly survive the perils of infancy, who grow and gain weight at reasonable rates, and who are free from obvious crippling deformities.

This is very solid achievement, but a closer look at some of these children will remove any cause for complacency. How rare is the bright-eyed child, mentally alert, firm of flesh and limb, of good posture, who causes little anxiety to the parents in the matter of general health. How very common is the dull and listless child with rotting teeth, deformed dental arches, bulging tonsils, pale and limpid flesh, indifferent posture, constipated, and drifting throughout the winter and most of the summer from episode to episode of sepsis, pyrexia of unknown origin, and general malaise. All too often indeed has one encountered this picture even in doctors' families. As regards the health of the adult population it may be arguable that that too has shown comparable improvement. Nevertheless the appalling volume of digestive, rheumatic, respiratory, circulatory, and mental disorders, reflected in sickness absenteeism, consumption of drugs, and demands on hospital facilities are little short of a national scandal and must surely be a challenge to preventive medicine.

Not the least significance of this recent work on the relation of the fats to morbidity is the revelation of further vital substances in common foodstuffs capable of exercising profound physiological influences on the body. With scarcely a week passing without that number being added to and the demonstration of deficiency syndromes associated therewith, one cannot but be astounded at the arrogance of those who blandly assure us of the adequacy of denatured diets reinforced piecemeal by what they regard as the essential vitamins, &c. All the more relevant, therefore, are Sinclair's observations concerning the hazards arising from the national consumption of cereals of low extraction-rates, and the more timely your own reiterated warning in this respect regarding our daily bread.

It seems likely that we shall remain largely at a standstill if we await a strong lead from the laboratory or the field. Where can we turn for a clue to the way ahead?

I contend, Sir, that we can no longer afford to ignore the fruits of the experience of McCarrison,[1] Picton,[2] Weston Price,[3] Wrench,[4] and many others inspired by them, who have proved for themselves that positive health is attainable by giving due attention to wholeness, freshness, and quality of food, including due regard to the soil in which it is grown.

The proof of the pudding is in the eating; and any family who, for instance, will take the trouble to bake their own bread from compost-grown, stoneground, wholemeal flour, who will eschew, so far as is practicable, refined sugars, manufactured sweetmeats, and processed foods, and who will include in their dietary significant daily quantities of raw, fresh fruit and vegetables, will reap unmistakable dividends of health even after relatively short periods. I single out bread (and would include, of course, other cereal foods, such as cakes and pastries) because I believe in the quantities in which it is normally consumed it is capable of exercising the greatest influence on the family health.

The first reaction of the busy housewife may well be to hold up her hands in horror at the thought of the added chore of home-breadmaking. The ladies assure me, however, that the process can soon be reduced to a fine art. Moreover, even the sceptical, having sampled it, seem prepared to make the effort on the commendation of its flavour, texture, and aroma. Their testimony to its health-giving properties comes later. I am informed that at least a hundred housewives in this town alone regularly bake wholemeal bread for the family. There is also considerable experience of this sort emerging from residential nurseries and institutions where enlightened dietaries are in force.

In view of the urgency of the situation, it would be an encouragement if others with similar family or institutional experiences were to reaffirm them at the present time.

Finally, it is to be noted that Dr. Sinclair justly dissociates himself from long-haired naturalism. The fact that, even in his learned treatise, he feels the need to do so suggests to me that as a profession, in consequence perhaps of the extravagent claims and vicious attacks of the naturopaths, we have come to regard the concept of fresh, whole, unadulterated, and naturally grown food as the province of the crank, whereas in truth the only really healthy communities which have ever been demonstrated anywhere in the world were found to be subsisting on just such a diet.

Public Health Department, Eastbourne. KENNETH O. A. VICKERY.

1. McCarrison, R. Nutrition and Natural Health. London, 1944.
2. Picton, L. J. Thoughts on Feeding. London 1946.
3. Price, W. A. Nutrition and Physical Degeneration. Los Angeles. 1939.
4. Wrench, G. T. The Wheel of Health. London, 1938.

RESERPINE IN SEVERE HYPERTENSION

SIR,—Professor Platt and Dr. Sears report (April 14) that in three of their female patients lactation developed as a side-effect of the administration of reserpine. I was much interested in this as my wife has recently observed an apparently adverse effect of reserpine on lactation.

A few weeks before term slight hypertension and fluid retention developed. 'Serpasil' was prescribed. No further rise in blood-pressure occurred, but water retention increased greatly and was only partly controlled by acetazolamide. For the first few days after delivery she took no serpasil and diuresis was profuse. Lactation started normally and she had a plentiful supply of milk. About a week after delivery, serpasil was again prescribed since the blood-pressure was still slightly elevated. Within a few days, water retention set in and at about the same time the milk began to go back. At the end of a week, she had difficulty in satisfying the baby giving him both breasts, whereas formerly she had had more than sufficient milk in one breast. She decided to stop taking serpasil. Approximately twelve hours later normal diuresis set in again and the breasts became heavily engorged. The next day there was again more than sufficient milk and there has been no further trouble.

Presumably a good many lactating women have taken reserpine, and it would be interesting to know whether any other similar observations have been made.

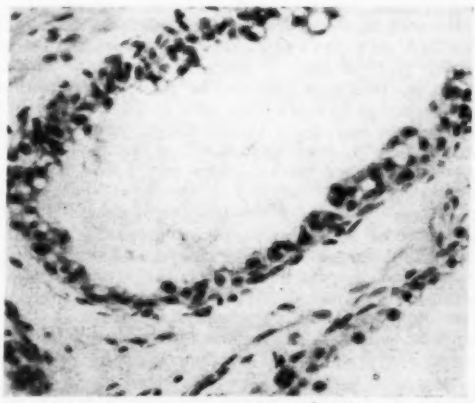
Arlesheim, Switzerland. A. M. WOOLMAN.

BREAST CHANGES IN FIBROCYSTIC DISEASE OF THE PANCREAS

SIR,—The letter of Dr. Stroud and Dr. Heppleston (April 21) raises some interesting points. I have recently studied a post-mortem series of breasts, gonads, and endocrines at the Royal Hospital for Sick Children, Glasgow, and agree that the histological appearance in their first case is a not infrequent variant of physiological neonatal mammary hypertrophy. I interpret this appearance of dilatation of ducts lined by a flattened epithelium as an involutional change in a duct ectasia produced by considerable secretion in the active phase of *Hexenmilch* production. Sometimes this appearance is seen in conjunction with the more normal picture of hyperplastic columnar epithelium, and in the latter I have observed vacuolation of the free border of the cells and passage of small eosinophilic globules (stainable by the periodic-acid/Schiff method) into the lumen of the dilated ducts (see figure). I have noted moderate to severe duct dilatation in 10 infants up to the age of 2 weeks of 65 such cases examined; and in a further 7 children under 1 year of age of 68 such cases examined. It is therefore not infrequent. 1 of these patients, a 12-week-old female, died of mucoviscidosis and staphylococcal bronchopneumonia, having been treated with aureomycin and chloramphenicol.

In my series physiological hypertrophy of the breast is an almost invariable finding in the full-term neonatal infant and may be accompanied by changes in the vaginal epithelium, ovaries, and prostate. This condition is less frequently seen in the premature infant, where the mammary ducts tend to be of solid, cord-like type. Regression usually begins in a few weeks but the condition may persist for several months with duct dilatation more obvious than epithelial hypertrophy. That hormonal effects may continue to be produced in childhood is suggested by my finding of follicular ovarian activity, endometrial mitoses, and active budding of the mammary ducts of a girl aged 7 years who died of hepatitis and cirrhosis. It is well known that liver disease in the adult male may lead to failure to break down œstrogens and result in gynæcomastia, prostatic hypertrophy, and testicular atrophy.

In addition to the case of mucoviscidosis mentioned above I have examined the breasts of a further 5 such children, and none showed significant histological abnormality of the breast or sweat-glands of the skin of the breast. Of these cases, 1 died at the age of 1 day and another at 3 days and neither had antibiotic therapy. A 3rd, who died with bronchopneumonia at the age of 4 months, had been treated with aureomycin, streptomycin, and penicillin. A further 2 cases each died at the age of 21 months with purulent pulmonary infection, each having been treated with penicillin, chloramphenicol, and oxytetracycline, while one also had aureomycin.



Section of breast, showing vacuolation of cells and eosinophilic globules (×280).

It would therefore seem that breast changes are at any rate not invariable accompaniments of the mucoviscidosis syndrome. Nevertheless the suggestion that antibiotic treatment may be responsible for mammary enlargement is worthy of further study.

University Department of Pathology, Western Infirmary and Royal Hospital for Sick Children, Glasgow.

A. T. SANDISON.

PROGRESSIVE EXOPHTHALMOS

SIR,—Mr. Rowbotham and Mr. Clarke (April 14) mention radiotherapy in the treatment of this condition, but express the opinion that it is not justifiable to irradiate the pituitary gland and neighbouring structures, although they do not define exactly what dangers they anticipate from such treatment.

In the 30 cases which they cite, operated on by their own method of orbital decompression, exophthalmos was relieved in every case, and no eyes were lost. However, orbital decompression, at least when carried out by the usual modification of Naffziger's method, does not always save the patient's eyes.

It is only in those severe and rapidly progressive cases, aptly termed malignant exophthalmos, that there is acute danger to vision from papillœdema, keratitis, and perforation of the globe. In the more chronic progressive exophthalmos, whether accompanied by thyrotoxic symptoms or not, the condition runs a much more benign course, and there is seldom any danger to vision, although ophthalmoplegia, once it has developed, is usually irreversible. Dr. Arthur Jones [1] cites a case of malignant exophthalmos in which, despite bilateral orbital decompression, perforation of the right eye occurred, necessitating enucleation. Subsequently orbital radiotherapy was given, and led to rapid regression of œdema of both orbits and of the proptosis of the remaining eye, the danger to which was averted. The improvement appeared to be permanent.

The following case may be of interest:

A tin-worker aged 48, had partial thyroidectomy in 1951 for toxic goitre. Three weeks after operation pronounced proptosis of the right eye developed. A few weeks later the left eye became affected also. In August, 1951, left tarsorrhaphy was performed. Owing to increasing orbital œdema and exophthalmos, in November, 1951, he underwent bilateral orbital decompression. This failed, however, to save the right eye, which later perforated and had to be enucleated. In May, 1952, he was referred to me. The left eye was much proptosed, with œdema of lids, and great tension could be felt in the orbital tissue and globe. The tissues of the socket of the right eye and right eyelids were grossly œdematous also. The patient was in acute discomfort, with severe frontal headaches, and he was extremely anxious about the possible loss of his remaining eye. The vision in this was not seriously impaired, but it seemed to be straining against the protective tarsorrhaphy, like a hound on the leash. In May, 1952, both orbits were irradiated to a dose of 500r. There was symptomatic relief, but the alarming tension and proptosis of the left eye remained. In January, 1953, it was decided to irradiate the pituitary gland. A dose of 2500r was delivered in three weeks. Within a few weeks the condition was obviously improved: the left eye was much less tense, watering had ceased, and the œdema of the orbit was subsiding; and he lost all his previously agonising headaches.

During the past three years, his condition has remained satisfactory, although there is still some proptosis, and it was felt wise to retain the tarsorrhaphy (with a small central hole through which he sees quite well). The subjective relief has been most striking.

In this case orbital decompression failed to save one eye, and the other one might well have been lost too if the disease had not been arrested and partly reversed by radiotherapy. Although Jones, and Sosman in

1. Jones, A. *Brit. J. Radiol.* 1951, **24**, 637.

America, have obtained good results by orbital irradiation to a dose of about 900r, this evidently does not work in every case. Hermann [2] in Edinburgh has reported 12 cases in which pituitary irradiation brought about most satisfactory results, and in 4 cases improvement was dramatic. The dosage she gave varied between 3000r in ten days and 5000r over two months. Many cases were reviewed four years after treatment, when results remained satisfactory, and there was no mention of any undesirable sequelæ.

The value of radiotherapy in this condition should be recognised, and there may be a tendency to exaggerate the dangers of irradiation in the neighbourhood of the pituitary. With modern technique, dose calculation is accurate; and, provided excessive dosage is avoided, no ill effects are likely. In some cases where pituitary cachexia or interference with hypothalamic structures has followed irradiation of a pituitary tumour, the damage may wrongly have been attributed to the treatment, when actually the tumour was responsible. Insertion of radon seeds into the pituitary can cause serious damage, not only to the functional activity of the gland, but to the neighbouring visual tracts; but this should not happen with properly administered external irradiation.

Radiotherapy Department,
Swansea Hospital. D. K. SAMBROOK.

REVISION OF THE CURRICULUM

SIR,—Dr. Ellis's plea last week to free the medical curriculum from the restrictions imposed by the G.M.C. recommendations and let it loose for experiment by the various medical schools may be ideal in conception but would, I feel, be chaotic in practice.

The result might well be training schemes throughout the country ranging from four to eight years, each reflecting the dominant influence of the particular school or university, and varying in content from my utilitarian ideas to the quite serious suggestion that courses in Latin and Greek should be compulsory for medical students. In addition, with the dwindling number of medical students and consequent competition, there would be the temptation to indulge in the "Come to X School" campaigns with attractive slogans such as "Graduate at Y—No Anatomy Required."

I have no doubt that the medical curriculum is, from time to time, considered by the College of General Practitioners, but I have yet to hear of any medical school with G.P.s on the faculty or committee dealing with medical courses.

If the Royal College of Physicians instigated a survey of opinion on the medical curriculum from the medical graduates of this country, I think they might well be surprised at the support for the utilitarian approach.

Department of Anatomy,
University of Glasgow. G. M. WYBURN.

FLUIDS FOR INTRAVENOUS INFUSION

SIR,—Dr. Barnard, in his letter of April 28, rightly stresses the need to scrutinise each bottle of infusion fluid when it is opened. Pressures above or below atmospheric do not, however, of necessity indicate a fault.

Consider, for example, the standard M.R.C. container. This holds 540 ml. of solution and 70 ml. of gas. When it is filled and autoclaved, the seal being tightly screwed down, the gas pressure inside rises and falls to normal again on cooling. If the seal is loosely inserted, so that the rubber may move slightly, gas is displaced during heating; but directly the pressure drops, the seal clamps down again. In this event there exists a partial vacuum in the bottle, which, tapped smartly with the hand, produces the characteristic rattle known as the "water-hammer" effect.

Increased internal pressure may be due to (*a*) slight pressurising of the filling-room, to maintain an air-flow away from the aseptic area, or (*b*) the difference in temperature during filling and during opening. A range of only 10°C, which is moderate, would account for the 10-cm. water-pressure observed. It may happen, too, that at filling the liquid itself is chilled.

The fundamental criteria are the sterility and freedom from pyrogens of the solution. These are not synonymous, and demand separate tests before the sample is released for use. My own handling of several hundreds of thousands of intravenous-infusion solutions has convinced me that contamination by micro-organisms is exceedingly rare—they are found in one bottle in perhaps fifty thousand. Almost invariably the organism is a mould, and it accompanies hair-cracks of the base or gross pitting or cracking of the neck of the bottle, presumably as a result of rough handling. Bottles which are faulty before sterilising nearly always explode during that process.

It is a wise precaution always to scrutinise the sample against a good light, just before administration of the fluid. If there is any obvious damage to glass or rubber, or if the solution shows any suspended solid, it should be put aside for further investigation.

Pharmacy Department,
Southmead Hospital,
Bristol. PETER COOPER.

RESERPINE IN ANXIETY STATES

SIR,—Reading the conclusion by Dr. Hare and his colleagues (April 28) that there was no general tendency to alleviation of anxiety symptoms in 32 patients who were given reserpine prompts me to comment on the application of the term "tranquilliser" to this drug and cruder preparations from *Rauwolfia serpentina*.

The effects of these drugs include depression, usually with extreme agitation and anxiety, insomnia, nightmares, and lethargy—all by now well recognised and frequently reported. Now the term "tranquil" usually implies a peaceful, contented state of mind. Only "lethargy," the commonest effect (occurring in 16 out of 40 cases of mine), could possibly be mistaken for this; but the description given by patients has not led me to believe that such a frame of mind has developed. It is described in such words as "I've had all the stuffing knocked out of me," "I've no energy at all," "a nauseating weakness." Tiredness or sleepiness are other terms used. To describe such an effect, the word "depressor" would be more accurate; it would also include the quietening effect on noisy psychotics and the mood-depressing function which has occurred in varying degree in 14 out of 40 patients.

My other objection to the term "tranquilliser" is based on the fact that of 12 patients who had obvious mild anxiety symptoms when treatment with reserpine or 'Rauwiloid' was started, only 2 improved in any degree at all, and 1 of these later developed troublesome dreaming "all night long." 3 became more anxious and agitated and developed marked or severe agitated depression. One man who said he was always apprehensive, stated that he was rather more so when on rauwiloid. This may not have been due to the drug, but it did not "tranquillise" him. This lack of "tranquillising" effect has been remarked on by Joiner and Kauntze [1] among others.

The term "depressor" would not of course cover the production of agitation or nightmares and insomnia; I would be interested to have a psychiatrist's opinion as to whether the agitation is an effect of the drug or a reaction to depression. The insomnia may well be a result of diurnal lethargy and drowsiness, but it is uncertain whether nightmares can be explained in this way.

Royal Victoria Infirmary,
Newcastle upon Tyne. P. S. TWEEDY.

2. Hermann, K. *Brit. J. Ophthal.* 1952, **36**, 1.

1. Joiner, C., Kauntze, R. *Lancet*, 1954, i, 1097.

NON-DISCIPLINARY ERASURE FROM THE REGISTER

SIR,—It is not generally realised that under the Medical Acts 1858–1950 the name of a registered medical practitioner may be lawfully erased from the Medical Register if he fails to reply to an inquiry from the registrar of the General Medical Council concerning his address and/or possible retirement from active practice. Restoration of a name so erased is a costly and tiresome business. Application must be supported by an affidavit and at least two certificates of identity and good character together with a fee.

Medical defence societies are seriously perturbed at the number of their members whose names are so erased. Not only are they unwittingly and illegally engaging in practice in the mistaken belief that they are registered medical practitioners, but they may find themselves removed from membership of their defence society, which would prove a serious matter if they became involved in threatened or actual litigation.

It therefore behoves every medical practitioner from time to time to satisfy himself that his name appears in the Medical Register and to furnish an address at which he can be reached by communications from the General Medical Council or from the defence societies. In their own interests, both present and future, practitioners are strongly urged to give attention to this matter immediately and thereby ensure that they are not acting illegally or deprived of the necessary legal advice and protection should medicolegal trouble arise in the conduct of their professional duties.

ROBERT FORBES
ALISTAIR FRENCH
C. C. MILLAR.
Secretaries of the Medical Defence Union, Medical Protection Society, and Medical & Dental Defence Union of Scotland.

FREUD

SIR,—Who was Freud's "faithful and gifted English biographer"? [1] The standard Life is by Jones, a Welshman.[2] And was not John Stuart Mill a Scot?

Bangour Village, West Lothian. JOHN COLLINSON.

FŒTAL MORTALITY IN PREGNANT DIABETICS

SIR,—I was interested to note the low fœtal loss in pregnant diabetics reported last week by Dr. Pedersen and Professor Brandstrup, particularly because these authors seem likely to be able to assist in confirming the correctness of my theory of the cause of eclampsia.[3]

In my paper I suggested that toxæmia and eclampsia originated from damage to the syncytium, produced by maternal opposition to the entry of hormones manufactured by a foreign or transplacental source (a fœtus or mole), after the mother had become intolerant to the presence or activity of these invading hormones. This maternal opposition to the entry of fœtal hormones would, I suggested, mean that with the onset of toxæmia (marked first by digital œdema, and later by hypertension and albuminuria) the entry of fœtal insulin into the diabetic mother would diminish, or be cut off, and that her blood-sugar would rise and her need for parenteral insulin would increase. Conversely, in the absence of toxæmia, fœtal insulin would continue to enter the mother freely, and reduce her requirements of parenteral insulin until term.

The low fœtal loss reported by Dr. Pedersen and Professor Brandstrup is attributed by them "either to the lowering of the mother's blood-sugar level for a long time, or to unknown factors favourably influenced by strict control of the diabetes" during the last eight weeks—i.e., those weeks in which toxæmia commonly occurs. Their conclusion supports my theory, and I hope that they may be able to supply further details concerning insulin requirements and blood-sugar findings in the presence and absence of toxæmia, which will further assist in proving my thesis.

Reading. K. D. SALZMANN.

1. *Lancet*, May 5, 1956, p. 617.
2. Jones, E. Sigmund Freud. London, 1956; vol. 2, pp. 47, 183.
3. *Lancet*, 1955, ii, 953.

CLUBS FOR THE HARD OF HEARING

SIR,—We shall be grateful if you will allow us the use of your columns to point out that persons who are suffering in any degree from loss of hearing can derive great benefit from joining a club for the hard of hearing. There are some two hundred of these clubs in Great Britain and Northern Ireland affiliated to the British Association of the Hard of Hearing.

The suffering entailed by loss of hearing is largely psychological and is due to loneliness and the frustration of the social instincts. It can be acute. Besides purely social activities, the clubs give opportunities for lip-reading practice. As they are almost wholly run by people who are themselves hard of hearing, they also offer scope for organisational talents which are often blocked by inability to hear on normal committees. The wider work of county leagues and of the association itself gives an outlet for all degrees of ability.

Within the clubs, experienced hearing-aid users can often advise novices on the practical use of an aid, thus saving unnecessary calls on the clinics.

There is no fear that the clubs will lead to segregation of the hard of hearing. On the contrary, many members who formerly shrank from normal contacts have been brought back to a full participation in the life of the community.

Our honorary secretary, whose address is 64, Liverpool Road, Chester, will at all times be pleased to answer inquiries and to supply helpful pamphlets.

Department of the Education of the Deaf, Manchester University. A. W. G. EWING
President.
Twickenham. P. A. REED
Chairman.

ACUTE AND LATENT PORPHYRIA

SIR,—Dr. Whittaker and Mr. Whitehead suggest (April 28) that barbiturates may be related more to neurological complications than to the precipitation of an acute attack of porphyria. That this is not always so is shown by the following case of acute porphyria.

A housewife, aged 43, was admitted in 1953 with a history of grand-mal epilepsy for twenty-seven years, for which she had received phenobarbitone for nine months twenty years previously, and again for two months before admission. Three weeks before admission she had had intermittent colicky abdominal pain, followed in a few days by paralysis of both legs. Phenobarbitone was discontinued a week before admission.

Her father had died three months previously. The cause of death was said to be cardiac failure. During the last five years he had been having attacks of abdominal pain, accompanied by the passage of dark red urine about every six months.

On admission the patient was extremely ill, with signs of peripheral circulatory failure and flaccid paralysis of both legs. Repeated examination of the urine showed no porphobilinogen. Her condition gradually improved, and four weeks after admission she was given a test dose of amylobarbitone sodium gr. 3. About seven hours later she complained of severe colicky abdominal pain, and a specimen of urine collected shortly afterwards was found to contain porphobilinogen (Watson-Schwartz test). This was confirmed by spectroscopy and examination of the urine under ultraviolet light. By the following day she was none the worse for her experience.

It would seem from this case that barbiturates can occasionally precipitate an attack of acute porphyria.

Llwynypia Hospital, Rhondda, Glamorganshire. M. S. PATHY.

FOOTBALLER'S ANKLE

SIR,—We have read with much interest Mr. McDougall's article.[1] Most osteo-articular lesions in athletes give rise to no symptoms, as Mr. McDougall points out, but they are clearly demonstrated by radiographic examination, which shows areas of calcification in the articular ligaments or at the insertion of tendons. In boxers, for instance, La Cava [2] has found areas of calcification on the dorsal aspect of the hands at the tendinous insertion of the radialis muscle.

The lesion of the astragalotibial joint in soccer and rugger players, wrestlers, and skiers has been well known for more than twenty-five years.[3 4] According to Biolato and Foà,[5] in trained subjects there is notable increase in elasticity of articular ligaments and therefore a wider range of excursion of the joint itself. In the ankle-joint there is enlargement of the tibiofibular mortise so that the astragalus takes part in dorsal and plantar flexion, abduction, and adduction of the foot. This abnormal mobility is the cause, according to Allaria,[6] of the arthrosis of the tibiofibular syndesmosis found in skiers.

Such conditions may be due partly to repeated slight trauma to the articular surface [7]; but they are largely due to repeated severe stretching of ligaments and tendons. This is in agreement with the concept of "chronic entesitis," recently described by La Cava at the Argentine Congress of Sporting Medicine.

Istituto Nazionale Medicina Sportiva, Stadio Torino, Rome, Italy. A. VENERANDO
G. LA CAVA.

PARAMETRIOGRAPHY

SIR,—Hysterosalpingography, pelvigraphy, and gynæcography are approved methods for the X-ray examination of the female genital organs. Arteriography can give some information about adnexal tumours, but we lack a good objective method for studying the extension of a parametrium tumour or an infiltration of the parametrium. Gynæcological palpation gives information on the size of the tumour, but it is often impossible to decide whether the tumour belongs to the parametrium or not. In order to overcome these difficulties the following method has been worked out.

The patient is placed in the lithotomy position. Two long, slightly curved injection needles are inserted 2–3 cm. into the tissue about 5 mm. lateral to the cervix on each side parallel to the long axis of the uterus. The usual intra-uterine cannula is inserted into the external os and fixed, and a third needle or thin cannula is introduced into Douglas's pouch. The patient is then placed in the supine position on the trochoscope table. During fluoroscopy 30 ml. of a solution consisting of equal parts of 0·25% lidocaine solution and 35% iodopyracet ('Umbradil') plus 500,000 I.U. penicillin are injected into each parametrium. Then the first postero-anterior film is taken. After that 10–20 ml. of 'Endografin' (Schering) or similar viscous water-soluble contrast medium is injected through the uterine cannula during fluoroscopy. Films are taken in posterior-anterior, lateral, and oblique projections. If a tumour found on gynæcological palpation is not seen in the parametrium, the patient is placed in the prone position. The foot end of the table is elevated about 15°. 600–1000 ml. of carbon dioxide is instilled into Douglas's pouch during fluoroscopy, and new films are taken.

This method has been practised since July, 1955, in patients with acute adnexitis, in order to follow the development of the inflammation, in some cases of sterility, and in cases where the findings on gynæcological examination have been inconclusive. In all, 40 women, including outpatients, have been examined; and so far no complications have occurred. On the contrary, in cases of acute adnexitis injection of penicillin into the parametrium seems to be of value, and is now used in therapy.

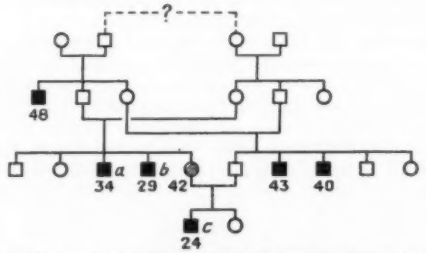
The results have been very promising. In several cases a correct diagnosis of endometriosis was established where "adnexitis" had previously been diagnosed; and in others the presence of extra uterine pregnancy or ovarian tumour, diagnosed by this method, was invariably confirmed at subsequent laparotomy.

Department of Obstetrics and Gynæcology, Sabbatsbergs Hospital, Stockholm, Sweden. AXEL INGELMAN-SUNDBERG.

1. McDougall, A. *Lancet*, 1955, ii, 1219.
2. La Cava, G. Le fratture della mano nel pugilato. Rome, 1948.
3. Baetzner, W. Sportunfall und erste Hilfe. Berlin, 1928. Sport und Arbeitschaden. Leipzig, 1936.
4. Giannotti, M. Chirurgia delle lesioni da sport. Turin, 1939.
5. Biolato, D., Foà, A. *Congr. int. Méd. Sport*, 1933.
6. Allaria, A. *Chir. Organi Mov.* 1950, **1**, 25; *Studi Med. Chir. Sport*, 1950, **10**, 353.
7. Venerando, A., Terzani, G. Atti 3 Giornata Reumatologica. Rome, 1955; p. 169.

PEPTIC ULCERATION IN A FAMILY

SIR,—The accompanying figure, showing the pedigree of an intermarrying Tripolitanian Jewish family, may be of interest in view of the stress now laid on the psychosomatic ætiology of duodenal ulcer. 7 members of the family had peptic ulcer; of these I know personally (*a*), (*b*), and (*c*), and in the remainder the diagnosis was confirmed radiographically. Wright et al.[1] recently described a family in which 9 out of 13 living siblings, have duodenal ulcers.



Family with 7 cases of peptic ulcer (black = duodenal ulcer; hatched = gastric ulcer). Figures indicate age at onset.

Dorot, Negev, Israel. A. YUVAL.

KETONURIA—A FALLACY IN ROTHERA'S TEST

SIR,—The standard textbooks on sideroom work and urine-testing state that there are no fallacies in Rothera's test for ketones. There would appear to be one fallacy which may occasionally cause confusion.

A male diabetic, aged 56, was admitted to hospital for review and stabilisation. Mild ketosis and glycosuria were present on admission. The glycosuria rapidly disappeared on adjusting the insulin dosage, but, despite the absence of other clinical or biochemical evidence of ketosis, routine urine tests by the nursing staff repeatedly showed "acetone present." The ferric-chloride test was negative, and on checking the nitroprusside test the addition of ammonium hydroxide led to an immediate colour reaction, but the colour was not the typical purple normally seen in ketonuria. Investigation revealed that the patient was receiving an aperient containing a small amount of phenolphthalein, and this drug, excreted in the urine, was producing the colour change in the presence of free alkali.

This fallacy in Rothera's test is not generally recognised and might, if overlooked, lead to insulin overdosage. It was found that urine containing phenolphthalein did not produce a colour change on 'Acetest' tablets, and the Ames Company Ltd., which manufactures these tablets, has kindly confirmed this by more accurate investigations. The use of the tablet method of testing for ketones will, therefore, avoid this fallacy, which should perhaps be recognised in the teaching of medical and nursing students.

I am indebted to Dr. J. A. W. McCluskie for permission to publish this case.

Western Infirmary, Glasgow. A. CAMERON MACDONALD.

1. Wright, J. T., Grant, A., Jennings, D. *Lancet*, 1955, ii, 1314.

FUND FOR TUBERCULOUS WOMEN

Mr. W. H. TOWNSEND, of the Margaret de Sousa Deiro Fund, writes:

This Fund exists for the treatment and relief of women who, normally supporting themselves by their own exertions, are temporarily incapacitated by pulmonary tuberculosis. There are grants to cover the cost of treatment, when this cannot be carried out in suitable conditions under the National Health Service, and grants towards convalescent holidays following institutional treatment. In approved cases the trustees also give financial assistance for rehabilitation, when part-time work yields an inadequate living wage. By its constitution the Fund cannot assist chronic cases where there is no prospect of return to employment. Further information can be obtained from the trustees at 1, New Court, Carey Street, Lincoln's Inn, London, W.C.2.

Parliament

The Guillebaud Report

Mr. R. H. TURTON, the Minister of Health, in opening on May 7 a debate on the Guillebaud report described it as a "welcome vindication of the National Health Service as it now exists." The report made clear that economy and efficiency had increased since the service began in 1948. Thus in real terms the increase in the gross cost of the service between 1949 and 1954 was small—only £30 million out of a total of £400 million—and during these years the service had been substantially improved and extended.

Perhaps the greatest problem of the service, he continued, was the tripartite division of the administrative structure; and the committee agreed that coöperation between the different branches of the service, and even within them, had not yet been fully attained. The Government, Mr. Turton said, accepted that there should not at this time be any transfer to other authorities of responsibility for hospital or general-practitioner services; any creation of new central or local ad-hoc authorities as the recipients of particular functions; any changes in regional-hospital-board areas or in their methods of appointment, or any transfer to those boards of responsibility for teaching hospitals in England and Wales, or any transfer of dental-clinic services from local authorities to the central health departments. The acceptance of these broad principles did not, however, cover the whole ground; and it was indeed dependent on certain minor adjustments of practice, if not of organisation. In the hospital service, for instance, the committee had suggested that it should be made clear that the regional hospital boards were responsible for exercising a general oversight and supervision over the administration of the hospital service in their region. The Government accepted this principle, but Mr. Turton wished to make it clear that this did not mean that the R.H.B.s should set the H.M.C.s (or for that matter the Minister the R.H.B.) in a strait-jacket of prior approvals. The conception was rather one of review—and, if necessary, rebuke—after the event, and not of reference upwards beforehand.

It was in the home health and preventive services, Mr. Turton thought, that the tripartite administrative structure raised most problems, and our first objective must be "to place at the disposal of the patient in his home, equally with the patient in hospital a coördinated team acting under the clinical guidance of his personal medical attendant." This would call for the closest coöperation between the general practitioners and the local health authorities. It should be the aim of the home team, which must include welfare as well as health workers, to keep out of hospital, including mental hospitals, all patients who could equally well be treated at home. In his view health and welfare were so closely linked that in the domiciliary field at least they ought to be administered as one.

Turning to finance Mr. Turton recalled that the Guillebaud Committee had suggested £30 million a year as a desirable rate of capital expenditure for the hospital service for the coming seven years. The programme for hospital building announced last year, providing £17½ million for new major projects and £13 million for capital expenditure, was a major step in the direction proposed by the committee. It would not be affected by the cuts in capital expenditure. The committee's recommendation that charges for dental treatment and spectacles should be reduced raised the question of priorities between the different parts of the service and must be reserved for further study.

However the service was organised, Mr. Turton concluded, so long as unlimited financial resources were not available, questions of priority would arise. In his own mind the three needs which could claim precedence were hospital accommodation, the mental-health services, and old people.

Dr. EDITH SUMMERSKILL agreed with the committee and the Minister that no major administrative changes should be made in the service anyhow at this stage. The proposal to restore certain kinds of hospitals to the local health authorities would, in her view, be a retrograde step because it would establish a central and a local hospital authority. She would like to see closer collaboration between the local authorities and the general-practitioner service. The conditions of service of the practitioner should bear a closer resemblance to those of the medical officer of health. The salaried medical officer's approach to medicine, with the emphasis on prevention, had been dissimilar to that of the general practitioner occupied with the curative side. Unfortunately the N.H.S. still made the doctor dependent on fees—there were still capitation fees—and that gap between these two doctors, working in two different medical worlds, was unfortunately not made smaller. The time was coming when we must consider the best means of remunerating the general practitioner.

She was disappointed that the Minister had not accepted any of the financial recommendations of the committee. 45% of our hospitals were built before 1891. The capital expenditure on hospitals was three times as high in 1938–39 as it was in 1952–53. The teaching hospitals, she thought, should be integrated with the regional hospital boards. It was an anachronism for them to be autonomous. The splendid isolation of the teaching hospitals tended to introduce a snob element into the health service which militated against coöperation and the closing of the human gap.

The shilling prescription charge was, she held, unjustifiable. It had reduced our huge medicine bill of £46 million by £4 million. It deterred not the hypochondriacs or the better off but the poorest in the community who should have no financial barrier between them and the doctor. With the expensive high-pressure salesmanship of the drug houses, was it any wonder that the Minister had to keep on asking for more money for proprietary drugs? She found it difficult to reconcile the colossal sum spent on drugs, and the Minister's weak attitude towards it, with the decision to cut the milk-supplies to the under-5s in the nursery.

Sir FREDERICK MESSER regretted that the Guillebaud report had not said more about preventive service. In his view it was worth considering whether the maternity and child-welfare services and domiciliary services should not be transferred from the county councils to the large boroughs. Mr. JOHN BAIRD suggested that, in considering priorities, we should remember that the N.H.S. was in fact a money-saving service. Sir HUGH LINSTEAD believed that doctors did not need Ministerial protection against the advertising methods of the drug firms.

Colonel MALCOLM STODDART-SCOTT thought that the Guillebaud report confirmed that the N.H.S. would become in the very near future the first priority of our social services. He besought the Minister to persuade the Cabinet to spend no less than £50 million a year for the next five years or so on building and modernising hospitals. He regretted that the Guillebaud report remained so silent on the needs of mental health and of preventive health and said nothing at all about the development of the industrial health service. In his opinion there should be one national health service both for industry and for the civil population.

Mr. ARTHUR BLENKINSOP had been impressed by Professor Titmuss and Mr. Abel-Smith's financial survey. What hope was there, he asked, of the regular production for the public of information about how the health service was going? As the Guillebaud report showed, the service was not extravagantly run, and he thought that everyone had been influenced to some extent by the aura of unfounded charges. The Minister, he thought, had little

reason to be proud of estimates for the present financial year. True, another £12 million was provided for hospital boards, an increase of about 4%, but a little over £7 million of that would go to meet wage-claims and rising food costs. Precious little improvement of the service would be available out of the extra money.

Training of Mental-health Workers

Raising this subject in the House of Commons on April 30, Mr. KENNETH ROBINSON said that ideally the future of the mental-health services lay not so much in having more and more beds as in emptying the mental hospitals and in preventing people from having to be admitted to them. This could only be achieved by extending and improving outpatient facilities and community and domiciliary services. The local health authorities were responsible for these latter services, and their instruments in carrying out these duties were the mental-welfare officers and the psychiatric social workers. He thought it odd that though both carried out highly responsible duties the P.S.W.S were highly trained and the officers not trained at all.

In 1951 the Mackintosh Committee recommended that there should be a substantial increase in the number of P.S.W.S and pointed out that the mental-health service demanded a large number of trained mental-welfare officers. These officers were responsible for prevention and aftercare among mental patients and perhaps their most important work was done in their capacity as duly authorised officers. The duly authorised officer often initiated the whole procedure of certification, and he might indeed be the first contact between the members of the public and the mental-health service. He could, and often did, override the opinions of general practitioners on patients suffering from mental disorder. One would imagine that these officers would undergo a rigorous and extensive course of training and obtain some kind of national qualification, but nothing of the kind happened. The Minister of Health in reply to a question had admitted that there was no national scheme of training, though some local authorities arranged courses. The Minister had added that the position was being studied by a working party. But immediately after the issue of the Mackintosh report, Mr. Robinson recalled, an ad-hoc committee was formed, with representatives from the universities, the Royal Medico-Psychological Association, the National Association for Mental Health, and the Society of Mental Welfare Officers. They had submitted proposals about training to the Minister in 1952. After 18 months the Minister wrote saying that the question could not be considered until the Working Party on Health Visitors, under Sir Wilson Jameson, had reported. The mental officers themselves appreciated that their increasing responsibility demanded a high standard of competence, national training, and qualification, especially for new entrants into the service.

Some months after the receipt of the Minister's letter the various bodies worked out an actual syllabus for a year's course. The National Association for Mental Health agreed to organise a scheme and a further approach was made to the Minister with the same negative result. Now, when the Jameson Working Party was almost ready to report, the bodies concerned were asked to await the findings of yet another committee, the Younghusband Committee on social workers, which meant a further delay of anything up to two years.

Turning to the psychiatric social workers, Mr. Robinson said that for them there was an established training of a high quality, but there were not enough training facilities and not nearly a large enough output. In its recent report the Committee on Maladjusted Children estimated that for a satisfactory child-guidance service alone four times as many P.S.W.S were needed—420 instead of the present 109; hospital authorities also needed more, for vacancies existed in every mental hospital. There was thus an acute shortage of these workers and the training was stiff. In his view the salary range of £495–750 p.a. was not sufficient incentive for the right kind of people.

Miss PATRICIA HORNSBY-SMITH, parliamentary secretary to the Ministry of Health, said there were 1100 mental-welfare officers in the local health authority services. Many had considerable experience from the days when the local authorities ran their own mental hospitals, and it should not be suggested that they were not doing their job satisfactorily. The advice of those who had had long experience was available to newcomers. Many local authorities were providing training courses, some at universities and some within their own organisation, including secondment to a mental hospital. She realised, however, that more courses were needed and she appreciated that the professional associations representing welfare officers felt strongly that there should be a properly recognised training.

The Mackintosh Committee were set up before the new pattern in the mental health service evolved. By their terms of reference they necessarily considered mental-health workers in isolation. But barriers between the mental and the physical health services were breaking down and we no longer regarded mental-health work in a vacuum. It might well be that from the reviews of the Working Parties on Health Visitors and Social Workers there would emerge a new concept of social welfare workers and the kind of training suitable for them.

Another report which the Government could not ignore in plans for mental-health work was that of the Royal Commission on the Law Relating to Mental Illness and Mental Deficiency (now sitting).

She sympathised with welfare officers who had waited so long and patiently, but while it was essential that they should be properly fitted to discharge their functions she did not agree that social work for the mentally ill could never be combined with work for those who were in difficulties in other ways. Sometimes it might be an advantage in obtaining the coöperation of a family if the trained worker came to them as a welfare visitor and not exclusively as a mental-welfare worker. There was also an advantage in the hospital P.S.W. having a wider sphere of activity, since he was the link between the patient and his home and friends and the medical and nursing staff of the hospital or clinic. These workers took a two-year social science course at a university, followed by a year's practical experience, and then a university mental-health course. The Minister assisted with grants for the university mental-health course. Since 1949–50 the grant had been £8000 and the average yearly intake of students for these courses was about 50. She did not deny that there was a shortage of these workers, but estimates of the number needed varied from 870 to 1500. According to the Association of Psychiatric Social Workers the number of qualified workers was 447, but that did not include many local-authority workers who, though they had not taken the recent specialised training, were qualified by long experience. Similarly hospital returns showed that they had 311 whole-time workers of whom only 182 were included in the association's estimate. The Government did not believe that greater numbers of students would automatically be forthcoming if more courses were provided or if the scale of the Government contribution were increased.

QUESTION TIME

Smoking and Lung Cancer

Mr. J. K. VAUGHAN-MORGAN asked the Minister of Health whether he was now in a position to make a public statement as to the effect of smoking in producing carcinoma of the lung.—Mr. R. H. TURTON replied: Since my predecessor made a statement in February, 1954, investigations into the possible connection of smoking and cancer of the lung have been proceeding in this and other countries. Two known cancer-producing agents have been identified in tobacco smoke, but whether they have a direct rôle in producing lung cancer, and if so what, has not been proved. The extent of the problem should be neither minimised nor exaggerated. The number of deaths from cancer of the lung has risen from 2286 in 1931 to 17,271 last year. To place the figures in perspective—in 1954, out of every 1000 deaths of men aged between 45 and 74, 77 were from bronchitis, 112 were from strokes and apoplexies, and 234 were from cancer, of which 85 were cancer of the lung. Deaths of women from cancer of the lung are still not very significant and represent a small fraction of the total.

The chairman of a committee of the Medical Research Council which has been investigating the subject considers that the fact that a causal agent has not yet been recognised should not be allowed to obscure the fact that there is, statistically, an incontrovertible association between cigarette-smoking and the incidence of lung cancer. The statistical

evidence from this and other countries to which he refers tends to show that mortality from cancer of the lung is twenty times greater amongst heavy smokers than amongst non-smokers. The Government will take such steps as are necessary to ensure that the public are kept informed of all the relevant information as and when it becomes available.

Mr. W. D. CHAPMAN: While thanking the Minister for at last saying something very forthright on this issue, may I first ask him what line of action he will take to inform the public about this danger? Has he in mind something as widespread as the campaign against diphtheria and in favour of diphtheria immunisation; and secondly, will he give us an assurance that the Government will take the initiative in such a campaign and will not leave it simply to the local authorities to do so if they wish?—Mr. TURTON: In my view, in the present stage of our knowledge, a national publicity campaign would not be appropriate.

Mr. VAUGHAN-MORGAN: Is there any evidence, particularly with regard to pipe-smoking; secondly, is there any evidence from the statistics as to how those who give up smoking are affected?—Mr. TURTON: It would appear that pipe-smokers face a heavier risk than non-smokers, but the risk is substantially less than that incurred by heavy cigarette-smokers. There is some evidence that the risk of contracting cancer of the lung decreases when smoking is given up.

Dr. EDITH SUMMERSKILL: In view of the fact that the Minister for the first time is informing the country that tobacco smoke has certain carcinogenic properties and has made an emphatic statement, would he not agree that it was rather unfortunate that this statement came after the statement by eminent authorities on the radio and on television? I understand that a film was even shown in this building last week. Is it not unfortunate that the Minister's statement should follow these statements and not precede them, and in view of the gravity of the present statement, will he say why he will not give us a periodic review of the situation?—Mr. TURTON: Whenever any more knowledge becomes available, I shall deem it my duty to put it before the House at once. That is what I have done in this case, but I must first of all see what has been the increase in knowledge since the last statement made. I did tell the House some time ago that two cancer-producing substances had been identified in tobacco smoke.

Dr. BARNETT STROSS: Will the Minister agree that there is now at least ample evidence to suggest that he should consult the Minister of Education and that all efforts should be made to bring this knowledge before school-leavers, boys and girls, in order that they at least may have some warning as to what may be the result of becoming as addicted to this habit, as so many of us are? Mr. TURTON: I have given my decision regarding a national publicity campaign. Any matter regarding what is done by the Minister of Education should be addressed to him. Mr. ARTHUR BLENKINSOP: Surely the Minister will review his statement with regard to a national campaign? Is it not highly important that any information that may become available should be reviewed from time to time?—Mr. TURTON: I quite agree. I certainly shall review it.

Housing of the Elderly

Replying to a question, Mr. DUNCAN SANDYS, Minister of Housing and Local Government, said that he had decided to inquire into the arrangements that were being made for housing elderly persons. His object was to see whether, having regard to the requirements of other sections of the population, old people were receiving a reasonable share of the accommodation provided and whether this was of the kind best suited to their physical needs and financial circumstances. Accordingly, he proposed to ask all local authorities and certain voluntary organisations to send him particulars of what they had done to deal with this problem. While this information was being collected a qualified official of the Ministry would go and see schemes of various kinds in different parts of the country and make a report to him upon them. He also intended to seek the views of the Central Housing Advisory Committee. The problem of housing elderly people was in many respects connected with that of providing for their health and welfare. His inquiries would therefore naturally be carried out in close collaboration with the Minister of Health.

Recruitment of Mental Nurses

Replying to a question, Mr. TURTON, Minister of Health, said that the basic allowances of new entrant student mental nurses under twenty-one were being increased by amounts varying from £20 to £45 and of those over twenty-one by amounts varying from £80 to £110 per year. The discontinuance of dependants' allowances would however mean that student mental nurses with a wife and one child would have these increases reduced by £72 16*s*. a year.

Replying to a further question, Miss HORNSBY-SMITH said that the numbers of new entrants of male student nurses in mental deficiency were in 1954, 140, and in 1955, 133; the numbers of readmissions were 34 and 25 respectively. The numbers leaving while still students were in 1954, 174, and in 1955, 121.

Nurses in Scottish Mental Hospitals

Replying to a question, Mr. JAMES STUART said that at Sept. 30, 1955, the ratio of nurses to patients was less than 1 to 5 in twelve of Scotland's twenty-nine mental hospitals, accommodating 42% of all patients in mental hospitals. At the same date this ratio was less than 1 to 6 in two of the twelve mental-deficiency institutions, accommodating 18% of all patients in such institutions.

Colour of Milk Bottles

Replying to a question asking what consideration had been given to the deterioration of milk by the use of clear glass bottles, particularly when exposed to light and sun for long periods, Mr. HEATHCOAT AMORY, Minister of Agriculture, Fisheries, and Food, said that there were no regulations about the colour of milk bottles. The matter had been considered by the Milk and Milk Products Technical Advisory Committee, and they had expressed the view, which he had accepted, that there were no adequate grounds for regulations.

Replying to further questions, Mr. Amory said he thought that it was true that milk retained its high food value better in coloured than in clear glass bottles. Milk could retain its riboflavine and vitamin-C content better, both of which suffered from long exposure to the sun. But there were practical considerations which made it difficult to deal with the matter by regulation. One of the considerations in the minds of the advisory committee was that with clear glass bottles purchasers could see more readily whether the milk was relatively clean or not.

Public Health

School Milk

CHANGES in the milk-in-schools scheme are announced. From Sept. 1 free milk will be available for school-children only during term-time, and the limited arrangements for supplying milk at weekends and during the holidays will cease. Children in nursery schools now receive ⅔ pint daily, and those in nursery classes receive ½ pint. From Sept. 1 all children will receive ½ pint, with the exception of delicate children attending special schools who may be given ⅔ pint. A saving of about £125,000 a year is expected.

In a circular to local education authorities the Ministry of Education asks that special care be taken in the ordering of milk, pointing out that the excessive purchasing of only 4 bottles in every 100 would involve the Exchequer in an extra expenditure of about £500,000 a year. The amount of milk ordered should be based on the number of pupils taking milk regularly, allowing for the usual rate of absences.

From Sept. 1 local education authorities will be responsible for supplying milk to pupils in non-maintained schools as well as maintained schools. The terms under which local education authorities supply milk to non-maintained schools will be determined by agreement between the authority and the proprietor of the school, and should include provision by the proprietor of such information about ordering and consumption as the authority may require. The terms should also include a stipulation that no payment should be made by parents for milk supplied.

Slum Clearance

Speaking at Stoke-on-Trent on May 4, Mr. Duncan Sandys, Minister of Housing and Local Government, said that during last year, some 25,000 slum houses were

pulled down and 75,000 people were rehoused. This year he hoped that these figures would be substantially higher; and he was confident that before long we should reach the target—namely, to rehouse every year at least 200,000 people from the slums.

London's Drainage

The London County Council is to consider next week the proposals of the rivers and drainage committee for a major programme of improvements estimated to cost about £9¾ million at the council's southern outfall main-drainage works. The scheme involves large civil, mechanical, and electrical engineering works and buildings, and will, together with the equally large improvements already well advanced at the northern outfall works, considerably improve the condition of the Thames.

Infant Mortality in Scotland

In Scotland the infant-mortality rate in 1955 was 30 per 1000 live births.[1] This rate is the lowest recorded in Scotland, being 1 below that for 1954 and 5 below the five years' average.

1. Quarterly Return of the Registrar-General, Scotland: quarter ended Dec. 31, 1955. H.M. Stationery Office. Pp. 40. 2s. 6d.

Infectious Diseases in England and Wales

Disease	Week ended April			
	7	14	21	28*
Diphtheria	4	7	5	8
Dysentery	1336	1442	1125	1319
Encephalitis:				
Infective	..	2	7	1
Postinfectious	2	1	3	1
Food-poisoning	153	185	166	190
Measles, excluding rubella	3354	2972	2105	1993
Meningococcal infection	40	35	18	27
Ophthalmia neonatorum	39	30	39	27
Paratyphoid fever	3	7	12	7
Pneumonia, primary or influenzal	698	631	433	369
Poliomyelitis:				
Paralytic	8	12	15	10
Non-paralytic	2	8	6	5
Puerperal pyrexia	258	246	253	222
Scarlet fever	681	537	516	647
Smallpox	..	..	..	..
Tuberculosis:				
Respiratory	561	738	701	801
Meninges and C.N.S.	15	12	13	12
Other	62	70	75	77
Typhoid fever	2	1	3	2
Whooping-cough	1346	1451	1545	1767

* Not including late returns.

Appointments

COPELAND, W. A., M.B. Aberd., D.M.R.D.: whole-time consultant in radiodiagnosis, Edinburgh Northern group of hospitals.

DARNBOROUGH, JACK, M.B. Edin.: whole-time deputy director, Sheffield regional blood-transfusion service.

GORDON, DOUGLAS, M.B. Edin., D.M.R.D., D.M.R.: part-time consultant radiologist, Moorfields, Westminster, and Central Eye Hospital (Westminster Branch).

MURPHY, E. F., M.D. N.U.I., M.R.C.P.E.: asst. physician in infectious diseases, Seacroft Hospital, Leeds.

READER, D. M., M.B. Lond., D.OBST.: registrar in obstetrics and gynæcology, Gloucestershire Royal Hospital, Gloucester.

TREVAIL-ARCHER, C. J., M.B. Manc.: asst. anæsthetist, Northampton area.

WATT, P. A., M.B. Camb., D.OBST.: medical registrar, Royal United Hospital, Bath.

The Hospital for Sick Children, Great Ormond Street, London:

CLAIN, ALLAN, M.B. Cape Town, F.R.C.S.: part-time surgical outpatient assistant.

MACKENZIE, D. Y., M.D. Lond., M.R.C.P., D.C.H.: house-physician.

O'DONNELL, BARRY, M.CH. N.U.I., F.R.C.S.: senior surgical registrar.

WALLIS, G. C. W. M., M.B. N.Z., D.L.O.: resident registrar to the ear, nose, and throat department.

Manchester Regional Hospital Boards:

DANZIGER, ARNOLD, M.R.C.S., D.A.: asst. anæsthetist (S.H.M.O.), Burnley and district hospitals.

JONES, W. K., M.R.C.S., F.F.A. R.C.S.: consultant anæsthetist, Manchester Royal Infirmary and South Manchester hospitals.

TURNBULL, F. W. A., M.B. Edin., M.R.C.P.: consultant chest physician, Manchester chest clinic, Baguley, Withington, and Wythenshawe Hospitals.

WOOLLEY, P. B., M.B. Manc., M.R.C.P.: asst. chest physician (S.H.M.O.), Manchester chest clinic and Monsall Hospital.

Notes and News

THE TEACHING HOSPITAL AND THE UNIVERSITY

AT the annual meeting of the United Sheffield Hospitals on April 26, Sir FRANCIS FRASER considered what a teaching hospital should aim to provide for its university, in the light of Wilfrid Trotter's assertion that clinical medicine is compounded of practical art, applied science, and experimental science.

"Science, or rather the scientific method," said Sir Francis, "requires that a conclusion in any situation be reached only when the evidence is complete and that until then judgment must be left in suspense. In the practice of medicine it is clearly unjustifiable to suspend judgment and its consequent actions in this way, and so the clinician brings to his aid a practical art. For this he requires experience of similar situations, a cultivated intelligence, and knowledge of and sympathy with human beings of all types." It is in the teaching hospitals that the future practitioner forms his habits and his attitude to sick persons. "Is there perhaps a tendency in teaching hospitals, occupied as they must be in providing for the more material requirements of diagnosis and treatment of serious disease, to let this aspect of the care of patients look after itself and to take it for granted? Each of you must have received on frequent occasions the story of the patient anxious and fearful of the unknown being kept waiting in unattractive surroundings for hours perhaps before an overworked member of the staff is able to give him or her a few minutes' attention, only to refer him to another department where the same thing happens. What the patient wants above all is to pour out a story to a sympathetic and understanding physician and to receive comfort and encouragement. That is the essence of the art of medicine. Are the practitioners of the future who are being trained as much, or perhaps even more, by example as by precept receiving the influence which it is our duty to provide?"

Turning to clinical medicine as an applied science, Sir Francis remarked that clinical trials, based on observations in animals, can be adequately provided for only in teaching hospitals, where clinicians can coöperate with the staffs of the university's basic-science departments. "Every teaching hospital should be sufficiently elastic in accommodation and staff to be able to contribute to investigations of this type, and teaching hospitals have the responsibility to encourage them." The development of medicine as an experimental science—now usually known as clinical science—has led to the appointment of whole-time heads of departments of clinical medicine and clinical surgery, with whole-time staffs to assist them and with laboratories close to the wards. A few pædiatric departments are similarly staffed and equipped; and before long workers in other specialties will need similar opportunities. "I have visited many teaching hospitals in this and other countries, and no matter how recently they have been planned and built there is always the same experience—that the laboratory accommodation for the clinical departments is much too small. . . . I would suggest . . . that laboratory accommodation adjacent to wards is likely to be wanted in the near future on a scale that may well seem fantastic at present."

In conclusion Sir Francis urged that the main teaching hospital of a university should contain at least small departments and a few beds devoted to each of the specialties. "Only in this way can each specialty be inspired by the advances taking place in the others and enabled to share in the new knowledge and methods. For the care of the patients of the community, by means of the applied science and the art of medicine, these special departments may well have larger units in other hospitals in the area, but they should all share in the invigorating intellectual environment of the university clinical centre."

THE NATURE OF GENIUS

THE centenary of the birth of Sigmund Freud was commemorated at a meeting held in London last Sunday by the International Psycho-Analytical Association, when Dr. HEINZ HARTMANN, the president, took the chair, and Dr. ERNEST JONES gave the Freud memorial lecture.

The question whether there really is such a thing as genius—that is to say, any attribute that differs in its very nature from those present in all human beings—Dr. Jones answered with a decided No: the differences between individuals, and between races, are quantitative rather than qualitative.

The *Encyclopædia Britannica* defines genius as "the highest conceivable form of original ability, something altogether extraordinary and beyond even supreme educational prowess"; and in this definition one notes what is certainly a characteristic attitude of the beholder, that of astonishment, which gives rise to the notion of mystery. Of all the characteristics of genius Revész selects *surprise* as being the most central, to which all others are accessory, and this seems to accord with the frequency with which geniuses receive their inspiration in a sudden flash that startles the recipient himself. In describing a recent discovery in physics Dr. Gabor remarked: "This statement has that touch of offending common sense which is the hallmark of every truly important scientific discovery." Freud's discoveries, said Dr. Jones, satisfied this criterion in full measure.

Allied to this feature of intuitive inspiration is the characteristic spontaneity with which the productions of genius appear. They can never be brought about by a deliberate effort of will, and nothing can ever force them. An attitude of passive surrender towards the flowing in of the valuable ideas must be significant for the psychology of the productive process.

Of the features characteristic rather of scientific production than of artistic inspiration, the most obvious is the indispensable one of absolute honesty: "the first and last task required of genius," wrote Goethe, "is love of truth." Closely akin to this mysterious feeling for what is true seems to go a sense of what is significant. This enables, or compels, a genius to generalise a finding where a lesser mortal would cautiously go on collecting more evidence before venturing on a general statement. Freud, though he would be accounted a man of sober and reflective judgment, afforded several instances of this kind of superlative boldness and sureness.

A further attribute of genius is the power of concentration. Buffon held that genius is nothing else than a greater aptitude for patience than that possessed by other men, and Carlyle described it as "first of all a transcendent capacity of taking trouble." Another writer, referring to "the self-surrender so familiar to creative minds," says: "The concentration of such a state may be so extreme that the worker may seem to himself or to others to be in a trance"—as happened when Freud was composing the final chapter of *The Interpretation of Dreams* in 1899 and sometimes seemed oblivious of his surroundings.

"What is the significance of this extraordinary concentration and intensity?" Dr. Jones asked. "What powerful impulses are driving their way at such moments? For there is every reason to suppose that men of genius are characterised by possessing exceptionally strong emotions and usually a correspondingly strong capacity for containing them. The tension induced by the preceding efforts to find a solution gradually mounts until it reaches a climax. The great mathematician of genius, Henri Poincaré, in describing how he made his own discoveries, said: 'One is struck by these appearances of sudden illumination, obvious indications of a long course of previous unconscious work. . . . These sudden inspirations are never produced except after some days of voluntary efforts which appeared absolutely fruitless.' . . . Evidently there must be a special coincidence between the unconscious impulses and some essential feature of the objective problem. In the preliminary cogitation various shiftings and similar mechanisms are going on in the unconscious the purpose of which is to achieve a sufficient degree of harmony with the censoring functions of the super-ego by means of which the accompanying guilt is kept in abeyance. At the successful moment there must have been achieved a quite remarkable degree of integration between the ego, the super-ego, and the id. It is no doubt this successful degree of synthesis, the overcoming of all barriers, that accounts for the sense of elation at the final moment of triumph."

The lecturer believed that an essential prerequisite of the productivity of genius must lie in a particular scepticism. "He must have refused to acquiesce in certain previously accepted conclusions. This argues a kind of imperviousness to the opinions of others, notably of authorities. Furthermore, he often has the capacity of seeing the existence of a problem where others have passed it by; he has refused to take something for granted as being either without meaning or too insignificant to bother about. This aloofness sets him free to speculate and investigate." But Freud himself once pointed out to Dr. Jones that such freedom is always obtained under the condition that another aspect of mental functioning is inhibited. "It may well be that the compensatory inhibition of which Freud spoke is the explanation of a feature often remarked in men of genius—namely, a certain naiveté, marked simplicity, and ignorance of the ways of the world."

"The scepticism and imperviousness to opinion of which I have spoken were prominent features of Freud's personality, and they extended over a wide field. Not long after getting to know him, however, I was struck by an exactly opposite feature, one which, it is true, operated in a far more limited field. I refer here to a curious credulity, a willingness to believe what he was told whether it was really likely or not. To it I would ascribe his well-recognised difficulty in forming an accurate estimate of personal character, a deficiency of which he himself complained. . . . Pascal pointed out that greatness is never at one extreme but consists of the union between two extremes, an idea which Sainte-Beuve later labelled the theory of the *entre-deux*. My own suggestion is a particular application of this."

Wondering whether his observation concerning Freud's personality could have any more general validity as a condition for the productivity of scientific men of genius, Dr. Jones studied the characteristics of others among them. The reputation of Copernicus, he said, rests on his scepticism—on his doubting whether the sun revolves round the earth. But, in questioning the views of Ptolemy, Copernicus was trying to justify Aristotle's dictum that all the heavenly orbs and orbits must have the form of a perfect circle; for in Aristotle's infallibility he had a credulous belief. In Sir Isaac Newton's personality both scepticism and credulity were prominent. His published work is marked by a rigid objectivity, and it was he who proudly proclaimed the famous sentence, *Hypotheses non fingo*; yet in earlier days he had spent much time in search for the philosopher's elixir and the means of transmuting metals into gold, and throughout his life theology was much more important to him than science—and, moreover, theology of a peculiarly arid and bigoted order. Faraday, the supreme physicist of the 19th century, had also his vein of credulousness: throughout his life he was an adherent of the obscure sect of Sandemanians, and for three years regularly preached sermons before them. In Darwin scepticism was tempered by a credulous attitude towards other authorities: even after his great discovery of the operation of evolution through natural selection he still believed in Lamarck's doctrine of evolution through the inheritance of acquired characters, a doctrine his own work had rendered superfluous. His friend and contemporary Huxley offers a very interesting contrast: he had a wider knowledge than Darwin, more originality, greater intellectual daring, and any amount of scepticism; but there is no record in his life of any evidence of credulousness to match it and (according to Dr. Jones's view) enable him to make really great discoveries. "Perhaps it is worth mentioning in the present connection the remarkable epidemic of belief in the cruder aspects of spiritism that infected several of the leading English physicists early this century: Sir William Barrett, Sir William Crookes, Sir Oliver Lodge, and Sir George Stokes. The number of times the mediums in whom they trusted were exposed as frauds made no difference to the tenacity of their beliefs."

After speaking, in psycho-analytical terms, of the possible correlation between credulousness and the characteristically receptive nature of genius, Dr. Jones ended his lecture[1] by saying that it will probably be generations before all the implications of Freud's ideas are fully worked out and the stimuli he provided for us fully acted on. "Revolutions in thought such as he brought about do not happen very often in history, and it may well be long before another similar one takes place."

REMUNERATION OF SENIOR HOSPITAL MEDICAL OFFICERS

UNDER an Industrial Court award, the remuneration of the 2631 S.H.M.O.s in the National Health Service (including 1190 employed part-time) is increased by £75 a year. Hitherto the scale has been £1500–£1950.

1. This will form one of a collection of essays, to be published by Basic Books Inc., New York, and distributed in this country by Tavistock Publications.

University of Cambridge

On April 28 the following degrees were conferred:

M. Chir.—C. Q. Henriques.*
M.B., B.Ch.—A. B. L. Peake.*
M.B.—Rachel E. Hudson, Frank Summers.
* By proxy.

University of Oxford

On April 26 the following degrees were conferred:

D.M.—G. A. Rose *
B.M.—Geoffrey Barraclough,* I. J. F. Smallwood.
* In absenti.

University of St. Andrews

Dr. James Walker has been appointed to the chair of midwifery and gynæcology in succession to Prof. Margaret Fairlie, who retires this year.

Dr. Walker graduated M.B. with honours in the University of Glasgow in 1938 and was awarded the Brunton prize as the most distinguished graduate of his year. In 1940 he was appointed Jardine research scholar in midwifery, and the same year he joined the Royal Air Force and served with Fighter Command as a medical officer until 1942 when he was posted to India. In 1945 he returned to this country and was responsible for medical administration of Transport Command stations in South-East England and Wales. On demobilisation, he was appointed to a specialist-training post in gynæcology at the Glasgow Royal Infirmary. Afterwards he was appointed surgeon to outpatients (gynæcology) at the infirmary and was appointed Hall tutor in midwifery. In 1947 he took the M.R.C.O.G. and became senior lecturer in midwifery and gynæcology in the University of Aberdeen. In 1954 he took his M.D. with honours. At present he is reader in the Institute of Obstetrics and Gynæcology, University of London, and consultant in obstetrics and gynæcology at Hammersmith Hospital.

Royal College of Physicians of London

In our last issue we inadvertently omitted from the list of newly elected fellows of the college the name of Dr. E. N. Rowlands, of London.

King's College Hospital Medical School

Dr. B. S. Cardell has been appointed to the readership in morbid anatomy at the medical school.

The Sir Charlton Briscoe research prize for 1955 has been awarded to Dr. P. C. Harris for his thesis on the effects of disease on the pressure in the pulmonary artery and right ventricle.

Royal Society of Medicine

On May 4, Sir William Gilliatt, president of the society, presented the Hill Hickman medal to Dr. Harold Griffiths of Montreal.

Royal College of Physicians of Edinburgh

At a meeting of the College on May 1, with Sir Stanley Davidson, the president, in the chair, the following were elected to the membership:

K. Cowan, A. Girdwood Fergusson, W. M. Jamieson, J. Marshall, E. D. Caldwell, S. Vaishnava, M. V. Phadke, N. L. Sharma, M.E. Barry, J. L. Bhatia, J. K. Baird, G. A. Tait, H. S. Moore, E. L. Blair, D. H. A. Boyd, G. F. Harris, D. T. Crichton, S. Omer, E. W. Poole, R. D. Montgomery, S. A. Stephen, W. C. Walker, C. N. Best, P. C. Bajpai, H. Weiskopf, M. J. Craft, S. A. Yeoh, R. P. Benson, N. Islam, B. P. Winn, G. L. Asherson.

A New Kind of Nursing Course

The Secretary of State for Scotland and the Nuffield Provincial Hospitals Trust have appointed a committee to keep under review the progress of the experimental scheme of training for student nurses to be undertaken in the Royal Infirmary, Glasgow (see *Lancet*, April 7, 1956, p. 394). The medical members are Dr. May Baird, Prof. L. J. Davis, and Sir Walter Mercer.

Society for the Study of Fertility

On Thursday and Friday, June 14 and 15, this society will hold a conference in London. Further details may be had from the hon. secretary, 31, Weymouth Street, Portland Place, W.1.

Medical Research in Scotland

The Secretary of State has appointed the following new members to the Advisory Committee on Medical Research in Scotland: Prof. I. G. W. Hill, F.R.C.P.E., Prof. J. W. Howie, M.D., Prof. G. F. Marrian, D.Sc., F.R.S., and Prof. J. S. Young, M.D.

How Many Doctors?

The committee set up last year by the Minister of Health and the Secretary of State for Scotland, under the chairmanship of Mr. Henry Willink, to consider the future numbers of medical practitioners and medical students, has fixed June 30 as its closing date for receiving written evidence. Organisations and persons who intend to submit written evidence should send it to the secretary of the committee, Mr. Philip Muston, at the Ministry of Health, 14, Russell Square, London, W.C.1, as soon as possible, and in any case not later than June 30.

CORRIGENDUM: *Association of Clinical Pathologists.*—In our report of April 28 (p. 554) the second sentence in the second paragraph about the paper by Dr. W. H. Taylor and Dr. J. V. O. Reid should have read: "*Only* 11 patients had oliguria . . ."

Diary of the Week

MAY 13 TO 19

Monday, 14th

ROYAL SOCIETY OF MEDICINE, 1, Wimpole Street, W.1
5 P.M. *Epidemiology and Preventive Medicine Section and the Chadwick Trust.* Dr. Huntington Williams (Baltimore): Influence of Chadwick on American Public Health.

Tuesday, 15th

ROYAL COLLEGE OF PHYSICIANS OF LONDON, Pall Mall East, S.W.1
5 P.M. Dr. F. T. G. Prunty: Chemical and Clinical Problems of the Adrenal Cortex. (First of two Humphry Davy Rolleston lectures.)
ROYAL COLLEGE OF SURGEONS OF ENGLAND, Lincoln's Inn Fields, W.C.2
3.45 P.M. Prof. David Slome: The Vestibular Apparatus. (Arnott demonstration.)
WRIGHT-FLEMING INSTITUTE OF MICROBIOLOGY
5 P.M. (St. Mary's Hospital Medical School, W.2.) Prof. W. E. van Heyningen: Research on Bacterial Toxins. (Almroth Wright lecture.)
INSTITUTE OF DERMATOLOGY, Lisle Street, W.C.2
5.30 P.M. Dr. P. F. Borrie: Rosacea.

Wednesday, 16th

ROYAL SOCIETY OF MEDICINE
5 P.M. *Comparative Medicine.* Dr. W. H. Thorpe, Mr. B. B. Boycott, Dr. H. Kay, Prof. H. J. Eysenck: Learning in Man and Animals.
POSTGRADUATE MEDICAL SCHOOL OF LONDON, Ducane Road, W.12
2 P.M. Prof. Ronald Hare: Transmission of Infections of the Respiratory Tract.
INSTITUTE OF DISEASES OF THE CHEST, Brompton, S.W.3
5 P.M. Dr. J. R. May: Bacteriology of Chronic Bronchitis.
INSTITUTE OF DERMATOLOGY
5.30 P.M. Dr. J. O. Oliver: Antibiotics.
HYPNOTHERAPY GROUP
8 P.M. (1, Wimpole Street, W.1.) Dr. W. A. H. Stevenson: Place of Hypnotherapy in Psychiatric Practice.

Thursday, 17th

ROYAL COLLEGE OF PHYSICIANS OF LONDON
5 P.M. Dr. Prunty: Chemical and Clinical Problems of the Adrenal Cortex. (Second of two Humphry Davy Rolleston lectures.)
ROYAL COLLEGE OF SURGEONS OF ENGLAND
5 P.M. Mr. E. F. Chin: Surgery of Funnel Chest and Sternal Prominence—Pigeon Chest. (Hunterian lecture.)
UNIVERSITY OF LONDON
5 P.M. (Guy's Hospital Medical School, S.E.1.) Dr. Louis M. Hellman (New York State University): Uterine Dysfunction.
POSTGRADUATE MEDICAL SCHOOL OF LONDON
4 P.M. Dr. M. D. Milne: Periodic Paralysis.
ROYAL SOCIETY OF TROPICAL MEDICINE AND HYGIENE
7.30 P.M. (26, Portland Place, W.1.) Dr. B. B. Waddy: Medical Field Units of the Gold Coast.
HONYMAN GILLESPIE LECTURE
5 P.M. (University New Buildings, Teviot Place, Edinburgh.) Mr. G. P. Mitchell: Congenital Dislocation of the Hip.

Friday, 18th

POSTGRADUATE MEDICAL SCHOOL OF LONDON
10 A.M. Dr. I. R. H. Kramer: Differential Diagnosis of Lesions of the Oral Mucosa.
ST. MARY'S HOSPITAL MEDICAL SCHOOL, Paddington, W.2
5 P.M. Mr. Aleck Bourne: The Non-Malignant Cervix.
SOUTH WEST LONDON MEDICAL SOCIETY
8.30 P.M. (Bolingbroke Hospital, Wandsworth Common, S.W.11.) Sir Clement Price Thomas: Carcinoma of the Lung.

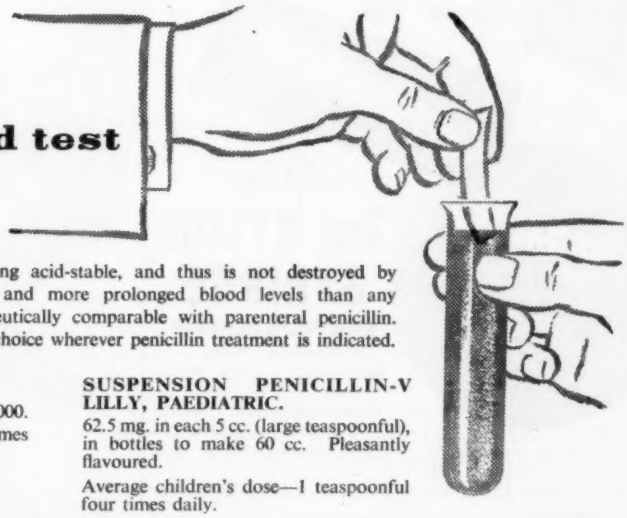
Births, Marriages, and Deaths

BIRTHS

BAKER.—On May 2 to Dr. Hazel Baker (née Hill), wife of J. A. C. Baker, M.A., of Wednesbury, Staffs, a fourth son—Edward James.

JACKSON.—On May 1, to Eileen (née Greenwood), M.B., and John W. Jackson, M.CH., F.R.C.S.—a daughter, Jennifer Mary.

passes the acid test



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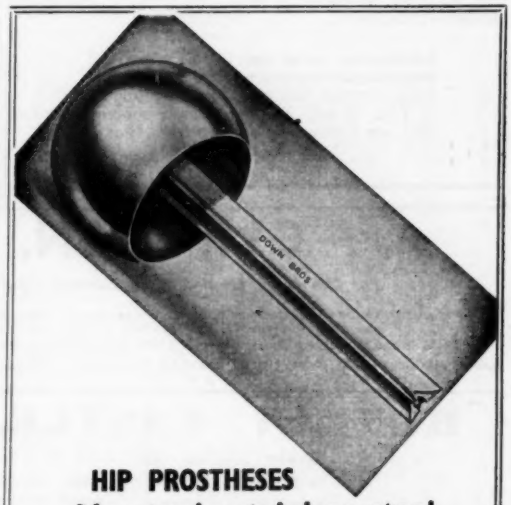

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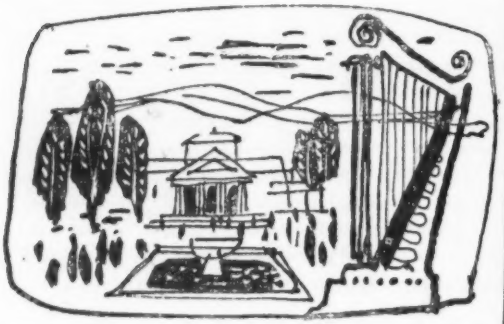

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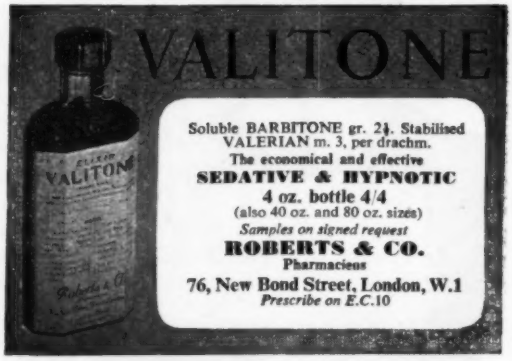

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For terms and further particulars apply to the Medical Superintendent (TELEPHONE: Northampton 4354 (3 lines)), who can be seen in London by appointment.

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The Terms and Conditions of Service of Hospital Medical and Dental Staff apply to all N.H.S. hospital posts we advertise, unless otherwise stated. Canvassing disqualifies, but candidates may normally visit the hospital by appointment.

Academic and Educational

UNIVERSITY OF LONDON

A LECTURE on "Uterine Dysfunction" will be given by Dr. LOUIS M. HELLMAN (New York) at 5 P.M. on 17TH MAY at Guy's Hospital Medical School, St. Thomas-street, London Bridge, S.E.1.

Admission free, without ticket.

JAMES HENDERSON, Academic Registrar.

THE UNIVERSITY and the ROYAL FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW

POSTGRADUATE MEDICAL EDUCATION COMMITTEE

COURSE IN DERMATOLOGY

An intensive full-time Course of Dermatology, designed primarily for General Practitioners, will be held in the Glasgow Royal Infirmary from 4TH to 9TH JUNE, 1956.

The fee for the Course is 5 guineas. Arrangements are available whereby National Health Service practitioners may, subject to certain conditions, recover the fee, locum and travelling expenses from Government sources.

Since the number of candidates for the Course is limited, those wishing to attend should make early application to the Director of Postgraduate Medical Education, The University, Glasgow, W.2, from whom further information may be obtained.

UNIVERSITY OF EDINBURGH

WILLIAM RAMSAY HENDERSON TRUST

2 LECTURES will be delivered in the Anatomy Lecture Theatre, University New Buildings, Teviot-place, Edinburgh, on WEDNESDAY and THURSDAY, 23RD and 24TH MAY, at 5 P.M. on both days by Prof. ALF BRODAL, Professor of Anatomy, University of Oslo, Norway.

Subjects: "The Reticular Formation of the Brain Stem" and "Anatomical Aspects and Functional Correlations."

Prof. G. J. Romanes will preside.

WALLACE & GUTHRIE, W.S., Agents for the Trustees.

JOHN MACPHERSON, Assistant Secretary to the University.

ANTI-TUBERCULOSIS CHEMOTHERAPY PROJECT (INDIA)

VACANCIES FOR MEDICAL OFFICER AND FOR BACTERIOLOGIST

The World Health Organisation and the Indian Government have invited the Medical Research Council to be responsible for scientific direction of a research project to assess the value of tuberculosis chemotherapy in domiciliary patients. The Council have accepted the invitation and now seek to recruit, on behalf of the World Health Organisation; (*a*) a Medical Officer (to assist the Medical Director), and (*b*) a Bacteriologist for work on the project in Madras which will include both out-patients and hospital patients. The successful candidate for the post (*a*) will be expected to do a limited amount of post-graduate teaching. For post (*b*) responsibilities will include the bacteriological diagnosis of tuberculosis, the culture and identification of acid-fast organisms and the investigation of bacterial sensitivity to the drugs under study, and the successful candidate will also supervise the training of research-workers in the bacteriology of acid-fast infections.

Post (*a*): Age—under 45. Experience in chest diseases, especially tuberculosis.

Post (*b*): Medical qualification, or University degree in bacteriology, with experience in running a laboratory.

Conditions of service: The successful candidates will be employed by W.H.O. by contract; for 2 years in the first instance, extendible to 5 years in all, for post (*a*), and for 1 year in the first instance, extendible, for post (*b*).

Both posts: Salary: £2100 p.a. (approximately) income-tax free under the usual W.H.O. concession, with yearly increments. (For post (*b*), it may be higher for a candidate with exceptional experience.) In addition lodging allowances (about £550 p.a.), dependant and kit allowances and educational grants, all tax free.

First-class air passages for men appointed and dependants to India and back.

Appointments will start as soon as possible.

It may be possible to arrange for the secondment of the successful candidates if they are, at present, employed by the National Health Service or the Medical Research Council.

Applications (2 copies, stating post sought), giving age, qualifications, details of experience and the names of 3 referees, should be sent to the Establishment Officer, Medical Research Council, 38, Old Queen-street, Westminster, London, S.W.1, within 1 week of the publication of this notice. Candidates placed on short list will be asked to fill up World Health Organisation questionnaires.

TANCRED'S STUDENTSHIPS

DIVINITY : MEDICINE : LAW

£100 p.a. each. For Men only

The Governors and Trustees of Tancred's Foundation propose to make their annual election of a Student in Physic at Gonville and Caius College, Cambridge, on the result of the Entrance Examination to be held in JANUARY, 1957, required from candidates for admission to Gonville and Caius College, Cambridge, who intend to read medicine.

Candidates must have been born in England, Scotland or Wales and be members of the Church of England and unmarried. Candidates must be within the ages of 17 years and 22 years on 1st October, 1957. The last day for sending in Petitions is 1st July, 1956.

Further announcements relating to the Divinity and Law Studentships awarded by this Foundation will appear in September, 1956, and February, 1957.

Apply for further particulars and form of Petition stating kind of Studentship and mentioning this paper to the Clerk, R. M. C. HOWARD, Esq., D.S.O., 28, Lincoln's Inn-fields, London, W.C.2.

ST. BARTHOLOMEW'S HOSPITAL MEDICAL COLLEGE

FINAL F.R.C.S.—NOVEMBER, 1956

A COURSE will be held for the above examination on Tuesday and Thursday evenings at 6.30 P.M., starting on THURSDAY, 6TH SEPTEMBER, 1956, and ending on TUESDAY, 30TH OCTOBER, 1956.

The course will consist of 16 clinical tutorial classes with short cases, followed by lecture-demonstrations on selected subjects. The course is not comprehensive. The class will be limited to 24 members.

Fee: 20 guineas, or to Bart's men 15 guineas.

Applications to the Sub-Dean, St. Bartholomew's Hospital Medical College, West Smithfield, E.C.1.

THE FACULTY OF RADIOLOGISTS

The SKINNER LECTURE will be delivered by Prof. ROBERT MCWHIRTER, F.R.C.S.E., F.F.R., F.R.S.E., of Edinburgh, at the Royal College of Surgeons, Lincoln's Inn-fields, London, W.C.2, on FRIDAY, 25TH MAY, 1956, at 5 P.M.

Subject: "Some factors influencing prognosis in breast cancer."

The Lecture is open to all members of the medical profession.

L.M.S.S.A.

FINAL EXAMINATION: SURGERY, 11th June, 9th July, 13th August, 1956. MEDICINE, PATHOLOGY, 18th June, 16th July, 20th August, 1956. MIDWIFERY, 19th June, 17th July, 21st August, 1956. MASTERY OF MIDWIFERY, May and November. DIPLOMA IN INDUSTRIAL HEALTH, July and December.

For regulations apply REGISTRAR, Apothecaries Hall, Black Friars-lane, London, E.C.4.

GUY'S HOSPITAL MEDICAL SCHOOL. Applications are invited for an appointment as JUNIOR LECTURER in the Bacteriology Department of Guy's Hospital Medical School. Applicants should have a medical qualification or an honours degree, preferably in a biological science. Salary according to qualifications and experience in the range £700–£1300 with superannuation and family allowances. Appointment will be for 1 year from 1st October, 1956, but the holder will be eligible for reappointment.

Forms of application and further particulars are obtainable from the Dean, Guy's Hospital Medical School, London Bridge, S.E.1, to whom forms of application should be forwarded not later than 26th May, 1956.

GUY'S HOSPITAL MEDICAL SCHOOL. Applications are invited for the following posts in the Anatomy Department at Guy's Hospital Medical School:—

3 JUNIOR LECTURERS (whole-time).

1 JUNIOR LECTURER (part-time).

The salary scale is £700, rising by annual increments of £50 to £900, with superannuation and family allowances. The appointment will be for 1 year from 1st October, 1956, but the holder will be eligible for reappointment.

Forms of application and further particulars are obtainable from the Dean, Guy's Hospital Medical School, to whom the forms of application should be forwarded not later than 24th May, 1956.

SOCIAL MEDICINE RESEARCH UNIT of Medical Research Council requires PHYSICIAN who has held appointment as Senior Registrar in a department of cardiology or department of general medicine which gave experience in cardiology, to develop field studies of cardiovascular disease including nutritional aspects. The appointed man will also be attached to the Cardiac Department, London Hospital. Salary in accordance with qualifications and experience; child allowances; superannuation. Appointment for 1 year in first instance.

Apply to Unit's Director at Research Laboratories, London Hospital, Ashfield-street, Whitechapel, E.1.

ST. GEORGE'S HOSPITAL MEDICAL SCHOOL, S.W.1. Applications are invited for the post of SENIOR LECTURER IN SURGERY in the Surgical Unit about to be established at St. George's Hospital, Hyde Park Corner. Salary according to the University scale for clinical teachers: F.S.S.U. and family allowances benefits. Duties to begin on or about 1st October next. The successful candidate would be eligible for appointment as an Honorary Consultant to St. George's Hospital, while holding this post.

Applications, with names of 3 referees, should reach the Dean of the Medical School not later than 1st June, 1956.

THE WELSH NATIONAL SCHOOL OF MEDICINE. (UNIVERSITY OF WALES.) Applications are invited for the appointment of ASSISTANT CLINICAL PATHOLOGIST in the Department of Pathology and Bacteriology. Previous experience in pathology is not essential. The appointment is a full-time one for a period of 2 years within the salary scale £750–£100–£1050 p.a., with participation in family allowance and superannuation schemes. The point of entry on the scale will depend on qualifications and experience. The person appointed will be required to commence duty as soon as possible.

Applications to the undersigned, from whom further particulars of the appointment may be obtained.

34, Newport-road, Cardiff. F. DODSWORTH, Secretary.

THE UNIVERSITY OF MANCHESTER. Applications are invited from candidates with medical qualifications registrable in this country for the post of LECTURER IN ANATOMY. Good research facilities available. Salary on the scale £1000–£1800 p.a. with membership of F.S.S.U. and Children's Allowance Scheme: initial salary according to qualifications and experience. The successful candidate will be expected to take up his duties as soon as possible.

Applications should be sent, not later than 7th June, 1956, to the Registrar, the University, Manchester, 13, from whom further particulars and forms of application may be obtained. Overseas applicants should send letters of application giving details of qualifications and experience, and should submit the names of at least 2 persons to whom reference may be made.

ROYAL FREE HOSPITAL SCHOOL OF MEDICINE. (University of London), Hunter-street, W.C.1. Applications are invited for the post of LECTURER IN PHARMACOLOGY (medical qualifications desirable) as from 1st September, 1956, at an initial salary of not less than £900 rising by £100 p.a. to £1400, with superannuation benefits and family allowances.

Further particulars may be obtained from the Secretary to whom applications should be sent not later than 26th May.

UNIVERSITY OF BIRMINGHAM. Faculty of Medicine. The University invites applications for the post of Whole-time LECTURER IN OBSTETRICS AND GYNÆCOLOGY (Grade II—Clinical) to work within the Professorial Unit and to begin duties as soon as possible. Salary scale up to £1700 a year according to age, qualifications and experience. F.S.S.U. and family allowance.

Applications (6 copies), with names of 3 referees, should be sent by 26th May, 1956, to the Assistant Registrar, The Medical School, Birmingham, 15, from whom further particulars may be obtained. G. L. BARNES, Secretary.

The University, Birmingham, 15, April, 1956.

UNIVERSITY OF BRISTOL. Applications are invited for the post of LECTURER (Grade II) IN PATHOLOGY (Morbid Anatomy) at a salary of £1000–£1750 p.a.

Applicants, who should have done their military service or be exempt, should send their full name, age, qualifications, details of education and experience, together with the names of 3 referees, to reach the undersigned, from whom further particulars may be obtained, on or before 31st May, 1956.

H. C. BUTTERFIELD, Registrar.

The University, Bristol, 8.

UNIVERSITY OF BRISTOL. Applications are invited for 2 appointments as DEMONSTRATOR IN PATHOLOGY. Salary scale £700–£50–£900 p.a. according to qualifications and experience. The duties include assistance with the teaching of medical and dental students and general pathology for veterinary students, and the conduct of autopsies. Facilities for research and experience of diagnostic histology are available.

Applications, giving full names, age, qualifications, details of education and experience, together with the names of not more than 2 referees, should reach the undersigned, from whom further particulars may be obtained, on or before 31st May, 1956.

H. C. BUTTERFIELD, Registrar and Secretary.

THE UNIVERSITY OF ALBERTA, Canada. Applications are invited for the combined post of ASSISTANT PROFESSOR OF BACTERIOLOGY (equivalent to British Lecturer) AND ASSISTANT BACTERIOLOGIST, Provincial Laboratory of Public Health. Candidates should have a medical degree and at least 2 or 3 years experience of medical bacteriology. Initial salary $6250, plus cost-of-living bonus, approximately $300. Promotion to Associate Professor on satisfactory service. University pension plan.

Applications and inquiries should be sent to the Dean, Faculty of Medicine, University of Alberta, Edmonton, Alberta, Canada.

Hospital Services : Senior Appointments

NORTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. OPHTHALMOLOGIST (Senior Hospital Medical Officer grade), Nottingdale School Treatment Centre, 1, Kenley-street, W.11. Duties involve 4 hours a week clinical time in 2 visits, Tuesday afternoons and Friday mornings. Clinic may be visited by arrangement with the Divisional Medical Officer, 129, Fulham Palace-road, W.6.

Application forms obtainable from, and returnable to, Secretary, North West Metropolitan Regional Hospital Board, 11A, Portland-place, W.1, before 11th June, 1956.

WESTMINSTER HOSPITAL, St. John's-gardens, S.W.1. Applications are invited for the post of CONSULTANT RADIOTHERAPIST (full-time). Candidates must possess a Diploma in Radiotherapy. Preference will be given to candidates having a higher qualification in medicine or surgery, and the Fellowship of the Faculty of Radiologists. Terms and conditions of service of hospital medical and dental staffs for the time being in operation apply.

Applications (12 copies), to include the names of 3 referees, should be sent to the House Governor, not later than 12th June, 1956.

CHELMSFORD, ESSEX. BROOMFIELD HOSPITAL. Required experienced Locum Tenens SENIOR HOSPITAL MEDICAL OFFICER (part resident). Unit has 330 Beds for the treatment of pulmonary tuberculosis in adults. Tuberculous and non-tuberculous thoracic surgery. Chest clinics and mass radiography.

Apply Physician-Superintendent.

EAST ANGLIAN REGIONAL HOSPITAL BOARD. ASSISTANT CHEST PHYSICIAN (whole-time), Peterborough and Huntingdon Chest Clinic Areas. Higher qualification and experience in chest diseases and tuberculosis necessary. Salary scale £1500–£1950.

Applications (8 copies), stating age, experience, and the names of 3 referees, to the Board's Senior Administrative Medical Officer, 117, Chesterton-road, Cambridge, by 28th May, 1956. Candidates invited to visit Clinic by direct arrangement with Hospital Management Committee Secretary. Memorial Hospital, Peterborough.

LEEDS REGIONAL HOSPITAL BOARD. Whole-time ASSISTANT PSYCHIATRIST (Senior Hospital Medical Officer scale) for duties at Menston Hospital, near Leeds, and associated clinics at Bradford, Leeds and Keighley. Applicants should hold the D.P.M. or other equivalent qualifications. Resident or non-resident ; accommodation is available for a single person.

Applications (12 copies), stating age, qualifications, and details of appointments held showing dates, with names and addresses of 3 referees, to Secretary, Park-parade, Harrogate, by 2nd June, 1956.

HEMEL HEMPSTEAD, HERTFORDSHIRE. WEST HERTS HOSPITAL. Locum Tenens ANÆSTHETIST (Senior Hospital Medical Officer) required for whole-time duties 12th–28th June, 1956, inclusive.

Applications to the Secretary.

ISLE OF MAN HEALTH SERVICES BOARD. Locum CONSULTANT RADIOLOGIST required for whole-time duties in the Isle of Man from 3rd September to 14th October, 1956. Remuneration on same terms as in England for similar locum tenens posts.

Applications, giving particulars of qualifications and experience, should be sent to the Secretary of the Board, 3, Harris-terrace, Douglas, Isle of Man, from whom further particulars may if desired be obtained.

MANCHESTER REGIONAL HOSPITAL BOARD.

(*a*) Part-time (8 half-days weekly) CONSULTANT PSYCHIATRIST to Parkside Hospital, Macclesfield (1500 Beds), and the Mid and South Cheshire Hospital Centres, outpatient clinics at Crewe and Northwich. Wide experience and higher qualifications essential ; appointee to live in area. 22nd May, 1956.

(*b*) Additional part-time (8 half-days weekly) post of CONSULTANT NEUROSURGEON to the Salford Unit (Salford Royal Hospital and Royal Manchester Children's Hospital) with limited peripheral duties. Wide experience and higher qualifications essential ; appointee to live near main hospitals. 23rd May, 1956.

(*c*) Whole-time NON-RESIDENT SENIOR CASUALTY OFFICER, Ashton-under-Lyne General Hospital, near Manchester (522 Beds, mainly acute). Special experience required in the treatment of orthopædic cases, fractures and trauma. Appointee will assist the Consultant Orthopædic Surgeon and also have special responsibilities in the Casualty and Traumatic (including fracture) Clinics, subject to general supervision of the Consultant. Starting salary within range of £1500–£50–£1950 (according to experience, &c.). A higher qualification desirable. Tenure of post limited to 4 years. 28th May, 1956.

Application forms from the Senior Administrative Medical Officer to the Board at Cheetwood-road, Manchester, 8, to be returned by dates stated.

MANCHESTER REGIONAL HOSPITAL BOARD.

(*a*) Whole-time or maximum Part-time CONSULTANT RADIOLOGIST to the Ashton, Hyde and Glossop Group of hospitals (mainly Ashton-under-Lyne General Hospital, near Manchester (677 Beds), &c.). Wide experience and higher qualifications essential, appointee to reside in area. 22nd May, 1956.

(*b*) Whole-time NON-RESIDENT ASSISTANT RADIOLOGIST (Senior Hospital Medical Officer) to the North Manchester Hospitals (Ancoats, Manchester Victoria Memorial Jewish, Manchester Northern and Crumpsall Hospitals) and at Booth Hall (Children's) and Monsall Hospitals and Prestwich (Mental) Hospital. Successful candidate will work under general guidance of Consultants in wide range of radiological investigations, including specialised pædiatrics, neurosurgical and cardiological. Wide experience of diagnostic radiology and D.M.R.D. essential. 22nd May, 1956.

Application forms from the Senior Administrative Medical Officer to the Board, Cheetwood-road, Manchester, 8, to be returned by dates stated.

NEWCASTLE REGIONAL HOSPITAL BOARD. NEWCASTLE GENERAL HOSPITAL. (838 Beds.) (Population covered 388,000.) 2 SENIOR CASUALTY OFFICERS (1 surgical, 1 medical), whole-time. Both Senior Casualty Officers will be required to undertake the work of the very busy Casualty Department (surgical and medical) subject to the supervision of the following Consultants :—

Surgical appointment : Senior Surgeons.

Medical appointment : Senior General Physicians.

The medical Senior Casualty Officer will also have duties in connection with the medical examinations of staff. Duration of appointments not exceeding 4 years. Salary scale £1400–£1950. Both appointees will be required to reside in close proximity to the Newcastle General Hospital. Resident accommodation may be available. Further particulars may be obtained from the Senior Administrative Medical Officer.

Applications, with names and addresses of 3 referees, to Senior Administrative Medical Officer, Walker Gate Hospital, Benfield-road, Newcastle upon Tyne, 6, within 28 days.

NORTH EAST METROPOLITAN REGIONAL HOSPITAL BOARD.

Full-time CONSULTANT RADIOLOGIST to Southend-on-Sea Group of hospitals, with principal duties at Southend General Hospital. Residence in area a condition of appointment.

Part-time CONSULTANT PSYCHIATRIST to Chase Farm Hospital, Enfield, and other Hospitals in Enfield Group, for 2 sessions a week.

Applications (6 copies), and names of 3 referees, should reach the Secretary, 11A, Portland-place, London, W.1, by Saturday, 26th May, 1956.

SCOTLAND. WESTERN REGIONAL HOSPITAL BOARD. Applications are invited for the following appointments :—

Whole-time ASSISTANT RADIOTHERAPIST based at the Western Infirmary, Glasgow. Salary (at age 32 and over) on the scale £1500–£50–£1950.

Whole-time ASSISTANT PHYSICIAN for duties at Stobhill General Hospital, Glasgow. Salary (at age 32 and over) on the scale £1500–£50–£1950.

These appointments are subject to the National Health Service (Scotland) superannuation regulations.

Applications (16 copies), stating date of birth, qualifications, experience, present appointment, and the names of 3 referees, to reach the Secretary, Western Regional Hospital Board, 64, West Regent-street, Glasgow, C.2, not later than 30 days after the publication of this advertisement.

OXFORD REGIONAL HOSPITAL BOARD. Consultant OPHTHALMIC SURGEON (part-time) for 5 sessions a week, to Aylesbury and High Wycombe area. Duties mainly at Royal Buckinghamshire Hospital, Aylesbury, with peripheral clinics in other parts of the county. The successful candidate will be required to live within a reasonable distance of Aylesbury to undertake his share of emergency duty.

Applications (10 copies), stating age, qualifications, experience, and the names of 3 referees, should reach the Secretary, 43, Banbury-road, Oxford, by 11th June, 1956.

OXFORD. THE UNITED OXFORD HOSPITALS. Applications are invited for the post of Part-time CONSULTANT PHYSICIAN in the Nuffield Department of Clinical Medicine. The appointment will be on a basis of 5 sessions in the United Oxford Hospitals. In addition the Nuffield Committee will undertake to provide academic work to bring the total salary up to the equivalent of 9 sessions in the National Health Service.

Applications, with full particulars of qualifications and experience, and the names of 2 referees, to be sent to the Administrator, Radcliffe Infirmary, Oxford, to arrive not later than 19th May, 1956.

SCOTLAND. SOUTH-EASTERN REGIONAL HOSPITAL BOARD. Applications are invited for a post of CONSULTANT RADIOTHERAPIST for whole or maximum part time duties, at the Royal Infirmary and the Western General Hospital, Edinburgh, vacant on 1st July, 1956.

Applications, giving particulars of age, qualifications and previous experience, together with the names of 3 referees, should be sent to the Secretary, South-Eastern Regional Hospital Board, Scotland, 11, Drumsheugh-gardens, Edinburgh, 3, by 11th June.

SCOTLAND. NORTHERN REGIONAL HOSPITAL BOARD. Applications are invited for a whole-time appointment of SENIOR HOSPITAL MEDICAL OFFICER in Obstetrics at the Lewis Hospital, Stornoway. The salary scale is £1500–£50–£1950 p.a. A house is available to rent.

Application forms and further details are obtainable from the undersigned, to whom applications should be sent by 23rd May, 1956.

A. M. FRASER, M.D.,
Secretary and Administrative Medical Officer.
Office of the Northern Regional Hospital Board,
Raigmore, Inverness.

SHEFFIELD REGIONAL HOSPITAL BOARD. Whole-time or maximum Part-time CONSULTANT CHILDREN'S PSYCHIATRIST for Barnsley, Rotherham, and the surrounding West Riding Area.

Application forms and further details from Senior Administrative Medical Officer, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, 10. Forms to be returned by 9th June, 1956.

SHEFFIELD REGIONAL HOSPITAL BOARD. Whole-time ASSISTANT PSYCHIATRIST for Rauceby Hospital, Sleaford. House available on Hospital estate. Salary scale £1500–£50–£1950.

Application forms and further details from Senior Administrative Medical Officer, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield. Forms to be returned by 9th June, 1956.

SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD requires Whole-time CONSULTANT PSYCHIATRIST at Park Prewett Hospital, Basingstoke, Hants (1500 Beds). The post is residential with a house available within the curtilage of the Hospital, at a charge of £133 11s. 7d. p.a. Candidates should possess D.P.M. and preferably a higher medical qualification, and have extensive psychiatric experience, together with some practical knowledge in the administration of a mental hospital. Duties include work at outpatient clinics in General Hospitals, psychotherapy at H.M. Prison, Winchester, and domiciliary work.

Applications by letter (5 copies), giving date of birth, qualifications, experience, and names of 3 referees, to the Secretary (S.1), South West Metropolitan Regional Hospital Board, 11A, Portland-place, W.1, by 9th June, 1956. Applicants may visit Hospital by local arrangement.

SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD requires Whole-time ASSISTANT PSYCHIATRIST (Senior Hospital Medical Officer grade) to work at The Old Manor Hospital, Salisbury, under the direction of the Physician-Superintendent of the Knowle Group. Candidates should possess D.P.M. and have experience of both inpatient and outpatient work in psychiatry. There is a house available at a reasonable rental.

Applications by letter (5 copies), giving date of birth, qualifications, experience, and names of 3 referees, to the Secretary (S.1), South West Metropolitan Regional Hospital Board, 11A, Portland-place, W.1, by 9th June, 1956. Applicants may visit Hospital by local arrangement.

SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD requires Part-time CONSULTANT RADIOLOGIST (6 half-days per week) for the Woking and Chertsey (Surrey) Group. Duties at St. Peter's Hospital, Chertsey, and Weybridge and Woking Victoria Hospitals; will also include visits to Botleys Park Hospital and Holloway Sanatorium. Candidates must have D.M.R. and wide experience in radiology.

Applications by letter (5 copies), giving date of birth, qualifications, experience, and names of 3 referees, to Secretary (S.1), South West Metropolitan Regional Hospital Board, 11A, Portland-place, W.1, by 9th June, 1956. Applicants may visit hospitals by local arrangement.

SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD requires Whole-time PATHOLOGIST-IN-CHARGE (Consultant) at the Royal Surrey County Hospital, Guildford, Surrey.

Applications by letter (5 copies), giving date of birth, qualifications, experience, and names of 3 referees, to Secretary (S.1), South West Metropolitan Regional Hospital Board, 11A, Portland-place, W.1, by 9th June, 1956. Applicants may visit Hospital by local arrangement.

WELSH REGIONAL HOSPITAL BOARD. Whole-time MEDICAL SUPERINTENDENT/CONSULTANT PSYCHIATRIST, Pen-y-Val Hospital, Abergavenny (1336 Beds). Applicants must have had wide experience in Psychiatry, hold a Diploma in Psychological Medicine, be competent to take clinical responsibility and to participate in the work of the associated outpatient clinics and domiciliary consultant service in the area served by the Hospital. Non-resident.

Applications (12 copies), naming 3 referees, to Senior Administrative Medical Officer, Temple of Peace, Cathays Park, Cardiff, within 21 days.

WELSH REGIONAL HOSPITAL BOARD. Part-time Locum Tenens SENIOR HOSPITAL MEDICAL OFFICER ANÆSTHETIST (8 sessions weekly) required Clwyd and Deeside area immediately for approximately 3 months.

Applications, naming 2 referees, to Senior Administrative Medical Officer, Temple of Peace, Cathays Park, Cardiff.

NEW ZEALAND. TAUMARUNUI HOSPITAL BOARD. Applications are invited from medical practitioners with qualifications registrable in New Zealand, for the position of Full-time PHYSICIAN to take full charge of medical patients admitted to the Taumarunui Public Hospital. Applicants should be eligible to qualify as a Junior Specialist under the Hospital Employment (Medical Officers) Regulations, 1952. A higher medical qualification is desirable. Salary scale £1290–£1590 plus cost-of-living bonus, the commencing salary in that scale to be determined by the Medical Officers Salaries Grading Committee. Full particulars of the duties of the position and the conditions of appointment are available on request, or from the office of the High Commissioner for New Zealand, Strand, London.

Applications, showing full particulars of qualifications, and experience, together with the names of 3 referees, should be forwarded to reach the Official Secretary, the Office of the High Commissioner for New Zealand, Strand, London, W.C.2, not later than 30th June. Envelopes should be marked "Physician, Taumarunui Hospital" in the top left-hand corner.

S. A. PHILIP, Secretary.

NEW ZEALAND. THE OTAGO HOSPITAL BOARD AND UNIVERSITY OF OTAGO. VISITING ASSISTANT PÆDIATRICIAN/ASSISTANT LECTURER in Pædiatrics. Applications are invited from duly qualified medical practitioners for the position of Visiting Pædiatrician to the Otago Hospital Board and Assistant Lecturer in Pædiatrics in the University of Otago, in accordance with the conditions of appointment obtainable from THE LANCET Office, 7, Adam-street, Adelphi, London, W.C.2, from the High Commissioner for New Zealand in London, or from the Office of the Secretary. The position is a part-time one, and the holder has the right of private practice. The salary payable is in accordance with the Hospital Employment (Medical Officers) Regulations, Visiting Assistant Specialist, either £1290 plus General Wage Increase of £81 7s. p.a., or £1590 plus General Wage Increase of £81 7s. according to qualifications and experience. At the present time the salary payable will be three tenths of the full-time rate in respect of the hospital work. Additional remuneration is paid by the University in respect of lectures.

Applications, stating age, experience and qualifications, together with testimonials and Health and Radiological Certificates should be in the hands of the undersigned not later than 10 A.M. on Friday, 29th June, 1956.

W. A. WILLIAMSON, Secretary, Otago Hospital Board.
P.O. Box 946, Dunedin, New Zealand.

Hospital Services : Junior Appointments

ANNIE McCALL MATERNITY HOSPITAL, Jeffreys-road, S.W.4. Locum OBSTETRIC HOUSE SURGEON (Female) required at the above Hospital, 4th–24th June, 1956, inclusive.

Applications to the Secretary.

CENTRAL MIDDLESEX HOSPITAL, Park Royal, N.W.10. NORTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. REGISTRAR (whole-time) in Obstetrics and Gynæcology required. Resident or non-resident. Post recognised for M.R.C.O.G. The Department consists of 84 obstetrical beds, 50 gynæcological beds and a large outpatient Department. Applicants may visit Hospital by direct appointment.

Application forms obtainable from, and returnable to, Group Secretary, Central Middlesex Group Hospital Management Committee, Acton-lane, N.W.10, by 22nd May, 1956.

CENTRAL MIDDLESEX HOSPITAL, Park Royal, N.W.10. RESIDENT SENIOR HOUSE OFFICER required for Casualty Department. Successful candidate will work under supervision of Orthopædic and Traumatic Specialist. Appointment for 6 months from 18th June.

Applications, with names of 2 referees or copies of 2 testimonials, to Medical Director by 19th May, 1956.

CENTRAL MIDDLESEX HOSPITAL, Park Royal, N.W.10. RESIDENT HOUSE OFFICER in General Surgical and Urological Department. Pre-registration appointment from 11th June.

Applications, with copies of 2 testimonials, to Medical Director by 19th May, 1956.

CONNAUGHT HOSPITAL, Walthamstow, E.17. (118 Beds.) 2 HOUSE SURGEONS required for 6 months (General Surgery and Special Departments). Posts vacant 18th and 31st May, 1956. Recognised for F.R.C.S.

Applications, with full details and copies of 2 recent testimonials, should be sent immediately to Secretary, Hospital Management Committee, Forest Group, Langthorne-road, E.11.

HACKNEY HOSPITAL, London, E.9. (General—841 Beds.) Applications from registered practitioners for the 6 months resident appointment of CASUALTY OFFICER AND E.N.T. HOUSE SURGEON (House Officer grade), should be sent immediately to Secretary, above address, quoting HH/CHO.

CHILD GUIDANCE TRAINING CENTRE, 6, Osnaburgh-street, N.W.1. Applications are invited for the posts of 2 PSYCHIATRIC REGISTRARS (5 sessions per week each) commencing 1st October, 1956. Preference given to applicants intending to specialise in Child Guidance. Previous psychiatric experience essential. Clinic may be visited by direct appointment.

Application forms obtainable from, and returnable to, Secretary to Committee, Paddington Group Hospital Management Committee, Harrow-road, W.9, by 5th June.

ELIZABETH GARRETT ANDERSON HOSPITAL, Euston-road, N.W.1. (ROYAL FREE HOSPITAL GROUP.) Applications are invited from pre-registration and registered Women medical practitioners for the post of HOUSE PHYSICIAN for medicine and paediatrics, to become vacant 1st July, 1956. Appointment for 6 months. Salary in accordance with Ministry of Health scale for House Officers.

Applications, with copies of 3 recent testimonials, should be sent to the Secretary, Elizabeth Garrett Anderson Hospital, by 16th May, 1956.

ELIZABETH GARRETT ANDERSON HOSPITAL, Euston-road, N.W.1. (ROYAL FREE HOSPITAL GROUP.) Applications are invited from pre-registration and registered Women medical practitioners for the post of SECOND HOUSE SURGEON. Appointment for 6 months from 1st July, 1956. Salary according to Ministry of Health scale for House Officers.

Applications, with copies of 3 recent testimonials, to be sent to the Secretary, Elizabeth Garrett Anderson Hospital, by 16th May, 1956.

ELIZABETH GARRETT ANDERSON HOSPITAL, Euston-road, N.W.1. (ROYAL FREE HOSPITAL GROUP.) Applications are invited from pre-registration and registered Women medical practitioners for the post of OBSTETRIC HOUSE SURGEON (recognised for the M.R.C.O.G.). Duties to commence 1st July, 1956. Appointment for 6 months. Salary in accordance with Ministry of Health scale for House Officers.

Applications, with copies of 3 recent testimonials, to be sent to the Secretary, Elizabeth Garrett Anderson Hospital, by 16th May, 1956.

GERMAN HOSPITAL, London, E.8. (General—157 Beds.) Applications for 6 months appointment of registered HOUSE PHYSICIAN (resident). Post now vacant.

Applications to Group Secretary, Hackney Hospital, E.9, quoting GH/HP.

GUY'S HOSPITAL AND SOUTH EAST METROPOLITAN REGIONAL HOSPITAL BOARD. Applications are invited to fill an established vacancy as SENIOR REGISTRAR in Venereology to the Board of Governors of Guy's Hospital and the South East Metropolitan Regional Hospital Board. The holder will be expected to divide his time between the 2 hospitals concerned during a 4-year tenure of the post. The appointment will be made jointly by the bodies concerned and will be held at Guy's Hospital and in the Regional Hospital in the Seamen's Group. The post, which will be reviewed annually, is subject to the terms and conditions of service of hospital medical and dental staffs (England and Wales) with duties commencing on a date to be arranged.

Forms of application are obtainable from, and should be lodged with, the Superintendent, Guy's Hospital, London Bridge, S.E.1, not later than 24th May.

GUY'S HOSPITAL AND SOUTH EAST METROPOLITAN REGIONAL HOSPITAL BOARD. Applications are invited to fill the following established vacancies for SENIOR REGISTRARS to the Board of Governors of Guy's Hospital and the South East Metropolitan Regional Hospital Board. They will be expected to spend a minimum of 1 and not more than 2 years in a Regional Board Hospital, in the Group as stated, on an exchange basis during a 4-year tenure of the post. The appointments will be made jointly by the bodies concerned and will be held in the first instance at Guy's Hospital. The posts, which will be reviewed annually, are subject to the terms and conditions of service of hospital medical and dental staffs (England and Wales), with duties commencing on 1st October, 1956.

General Medicine—Bromley Group.
General Surgery—South-East Kent Group.
Obstetrics and Gynæcology—Bromley Group.
Psychological Medicine—Bexley Group.
E.N.T. Surgery—Bromley Group.
Orthopædic and Traumatic Surgery—Medway and Gravesend Group.
Clinical Pathology—Lewisham Group.
Diagnostic Radiology—Bromley Group.
Physical Medicine—Bromley Group.

Forms of application are obtainable from, and should be lodged with, the Superintendent, Guy's Hospital, London Bridge, S.E.1, not later than 24th May, 1956.

HIGHLANDS GENERAL HOSPITAL, Winchmore Hill, London, N.21. HOUSE SURGEON required. Duties mainly orthopædic with some E.N.T., casualty and emergency general surgery. New Operating Theatre, Outpatient and Casualty Departments. Preference given for applicants seeking pre-registration post under Medical Act, 1950.

Applications, with copies of 3 testimonials and name and address of 1 referee, to Hospital Secretary.

HIGHLANDS GENERAL HOSPITAL, Winchmore Hill, London, N.21. ANÆSTHETIST (House Officer grade), resident, vacant 3rd June. 100 active surgical and orthopædic beds, approximately 1200 operations annually.

Applications, with copies of 3 testimonials, and name and address of 1 referee, to Hospital Secretary.

KING EDWARD MEMORIAL HOSPITAL, Ealing. HOUSE OFFICER in Gynæcology with obstetric duties at Perivale Maternity Hospital, Greenford, vacant 1st June. Preference given to persons seeking second pre-registration post under the Medical Act, 1950.

Applications to Group Secretary, South West Middlesex Hospital Management Committee, West Middlesex Hospital, Isleworth, by 22nd May, 1956.

HAMMERSMITH HOSPITAL AND POSTGRADUATE MEDICAL SCHOOL, Ducane-road, London, W.12. Whole-time NON-RESIDENT SENIOR REGISTRAR (radiodiagnostic) required. Post vacant end July.

Applications, stating age, qualifications, experience, names of 2 referees, to Secretary, Board of Governors, by 22nd May.

LAMBETH HOSPITAL, Brock-drive, S.E.11. Applications are invited for the appointment of RESIDENT CASUALTY OFFICER as from 1st June, 1956. The post is graded as Senior House Officer or House Officer according to experience and is recognised for the F.R.C.S.

Forms of application from the Physician-Superintendent.

LONDON CHEST HOSPITAL. Hospitals for Diseases OF THE CHEST. A vacancy occurs for RESIDENT SURGICAL REGISTRAR at the Hospital's Country Branch, near Letchworth. There are 207 Beds, mainly surgical, and candidates should be experienced in thoracic surgery. Appointment for 6 months, with the prospect of renewal.

Applications, stating age, qualifications with dates, and previous appointments held, with copies of 3 testimonials, should be forwarded at once to the House Governor, London Chest Hospital, E.2.

LONDON HOSPITAL, Whitechapel, E.1. Applications are invited for the post of SENIOR REGISTRAR to the Accident and Orthopædic Department. Candidates must be Fellows of the Royal College of Surgeons. The appointment will be for 1 year in the first instance.

Applications (12 copies), giving the names and addresses of 3 referees, should reach the undersigned by 22nd May, 1956.

H. BRIERLEY, House Governor.

LONDON HOSPITAL, Whitechapel, E.1. Applications are invited for the post of REGISTRAR to the Accident and Orthopædic Department. A higher qualification, although desirable, is not essential, but experience in general surgery is necessary. The appointment will be for 1 year in the first instance.

Applications (12 copies), giving the names and addresses of 3 referees, should be received by the undersigned by 31st May, 1956. H. BRIERLEY, House Governor.

LONDON HOSPITAL, Whitechapel, E.1. Applications are invited for the post of REGISTRAR to the Department of Physical Medicine. A higher qualification, although desirable, is not essential. The appointment will be for 1 year in the first instance.

Applications (12 copies), giving the names and addresses of 3 referees, should reach the undersigned by 31st May, 1956.

H. BRIERLEY, House Governor.

METROPOLITAN HOSPITAL, Kingsland-road, London, E.8. CLINICAL ASSISTANT (General Practitioner grade) required for Dermatology Department, 1 session per week (Wednesday morning) at present held at above Hospital.

Applications, with names of 2 referees, and details of experience, to Hospital Secretary immediately.

MIDDLESEX HOSPITAL, W.1. Applications invited from fully registered candidates for the following posts vacant 1st August.

SENIOR RESIDENT ASSISTANT ANÆSTHETIST (graded as Senior House Officer).

JUNIOR RESIDENT ASSISTANT ANÆSTHETIST (graded as House Officer).

Forms of application, obtainable from Deputy Superintendent, should be returned, naming 2 referees, by 2nd June.

MIDDLESEX HOSPITAL, W.1. Applications invited for post of Locum SENIOR REGISTRAR or REGISTRAR to Neurosurgical Unit.

Apply, naming 2 referees, to Deputy Superintendent, as soon as possible.

MIDDLESEX HOSPITAL, W.1. Applications invited for post of OBSTETRIC AND GYNÆCOLOGICAL REGISTRAR. Duties at the Middlesex Hospital and the Hospital for Women, Soho.

Rules and application forms, obtainable from Deputy Superintendent, should be returned, naming 2 referees, by 2nd June.

MILE END HOSPITAL, Bancroft-road, London, E.1. Applications are invited for 2 posts of HOUSE SURGEON (second or third posts), Obstetrics/Gynæcology. Posts recognised in obstetrics for M.R.C.O.G. Vacancy (*a*) 7th June, 1956, (*b*) 1st September, 1956.

Application forms, obtainable from Physician-Superintendent, to be returned by 25th May, 1956, with copies of not more than 3 testimonials.

NATIONAL HEART HOSPITAL, Westmoreland-street, London, W.1 (with which is associated the Institute of Cardiology). Applications are invited for the post of RESIDENT MEDICAL OFFICER (Male). The appointment is for a period of 6 months from 1st July, 1956, but may be renewed for a further period not exceeding 6 months. The status and salary are either that of a Senior House Officer or Registrar and are in accordance with the national terms and conditions of service.

Applications, with copies of 3 recent testimonials, should be sent to me not later than Friday, 25th May, 1956.

ROBERT G. E. WHITNEY, Secretary to the Board.

NORTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. REGISTRAR in Obstetrics and Gynæcology is required for 2 years at the Luton Maternity Hospital and Luton and Dunstable Hospital, Luton, and at the Hammersmith Hospital and Institute of Obstetrics and Gynæcology. The first year to be spent at Luton and the second at Hammersmith. The post is recognised for the M.R.C.O.G., but preference may be given to a candidate with higher qualifications. Post vacant from 1st July, 1956. Hospitals may be visited by direct appointment.

Application forms obtainable from, and returnable to, the Secretary, Luton and Hitchin Group Hospital Management Committee, St. Mary's Hospital, Luton, Beds, by 29th May, 1956.

NORTH EAST METROPOLITAN REGIONAL HOSPITAL BOARD.

MEDICAL REGISTRAR (resident), St. Andrew's Hospital, Billericay, Essex.

OBSTETRIC REGISTRAR (resident if single, unfurnished flat available for married candidate), Barking Hospital, Barking, Essex.

SURGICAL REGISTRAR (resident or non-resident), St. Mary's Hospital for Women and Children, Plaistow, E.13.

SURGICAL REGISTRAR (resident or non-resident), St. Andrew's Hospital, Bow, E.3. Recognised for F.R.C.S.

SURGICAL REGISTRAR (resident), St. Andrew's Hospital, Billericay, Essex. Recognised for F.R.C.S.

ORTHOPÆDIC REGISTRAR (resident), Tilbury and Riverside General Hospital, Orsett Branch, near Grays, Essex. Recognised for F.R.C.S. Active Orthopædic and Traumatic Unit of over 50 Beds—modern accident reception unit in course of erection.

Appointments subject to review after 1 year.

Application forms from Secretary, 11A, Portland-place, W.1, to be returned by 26th May, 1956.

NORTH MIDDLESEX HOSPITAL, Edmonton, N.18. HOUSE PHYSICIAN, required for 6 months starting on 1st July. Recognised pre-registration appointment (first or second post). General medicine.

Applications, stating age, nationality, qualifications, experience, with copies of recent testimonials, to Secretary of Hospital by 21st May.

PRINCE OF WALES'S GENERAL HOSPITAL, N.15. (248 Beds.) Applications are invited from registered medical practitioners for the post of SENIOR HOUSE OFFICER RESIDENT SENIOR CASUALTY OFFICER, recognised for F.R.C.S. examination, for a period of 6 months, vacant 18th June, 1956.

Application form from Secretary, Tottenham Group Hospital Management Committee (Group No. 4), The Green, N.15, to be returned by 26th May, 1956.

PUTNEY HOSPITAL, Lower Common, S.W.15. House PHYSICIAN (resident), Male or Female, vacant 4th June, 1956. Open to pre-registration candidates.

Apply Hospital Secretary not later than 23rd May, 1956, enclosing copies of 3 recent testimonials.

QUEEN CHARLOTTE'S AND CHELSEA HOSPITALS. ANÆSTHETIST (Senior House Officer), resident post, tenable for 6 months from 1st July, 1956, in the first instance, for duties at both hospitals. Post recognised for the purpose of the F.F.A.R.C.S.

Applications to the House Governor by 25th May on forms obtainable from 339, Goldhawk-road, London, W.6.

ROYAL FREE HOSPITAL. Applications are invited from registered medical practitioners for the post of HOUSE OFFICER to the Infectious Diseases Department. Applicants would also be expected to hold a further resident post as House Officer to Pædiatric Department consecutively for a period of 6 months each. Duties to commence 1st July, 1956. Salary and conditions of service in accordance with those laid down by the Ministry of Health for House Officers.

Application forms may be obtained from the Secretary, Royal Free Hospital, Gray's Inn-road, W.C.1, to whom they should be returned not later than 19th May, 1956.

ROYAL FREE HOSPITAL. Applications are invited from registered medical practitioners for the post of HOUSE OFFICER to the Pædiatric Department. Applicants would also be expected to hold a further resident post as House Officer to the Infectious Diseases Department consecutively for a period of 6 months each. Duties to commence 1st July, 1956. Salary and conditions of service in accordance with those laid down by the Ministry of Health for House Officers.

Application forms may be obtained from the Secretary, Royal Free Hospital, Gray's Inn-road, W.C.1, to whom they should be returned not later than 19th May, 1956.

ROYAL MASONIC HOSPITAL, Ravenscourt Park, London, W.6. Applications are invited for the post of RESIDENT SURGICAL REGISTRAR. Appointment on or about 1st July. Gross salary—first year £850 (residential emoluments of £130 deductible); second year £965 (residential emoluments of £145 deductible).

Please state age, qualifications, past and present appointments and include 2 recent testimonials and/or the names of 2 referees. Applications should reach the undersigned (from whom further information may be obtained) on or before 17th May, 1956. R. E. LAWSON, Secretary and House Governor.

SOUTH LONDON HOSPITAL FOR WOMEN AND CHILDREN, Clapham Common, S.W.4. Applications are invited from registered medical Women for the post of SENIOR HOUSE OFFICER in Pathology. Previous experience in laboratory work is not essential. Applicants will be required to live near the Hospital.

Form of application from the Secretary.

ST. ANDREW'S HOSPITAL, Bow, E.3. Bow Group HOSPITAL MANAGEMENT COMMITTEE. Applications are invited from registered medical practitioners for appointment as SENIOR HOUSE OFFICER ANÆSTHETIST. The post is recognised for D.A. and F.F.A.R.C.S. examinations.

Applications, stating age, qualifications and experience, with copies of 3 testimonials, should be sent to the Group Secretary, Bow Group Hospital Management Committee, 2A, Bow-road, London, E.3.

ST. ANDREW'S HOSPITAL, Bow, E.3. Applications are invited for the post of HOUSE PHYSICIAN (recognised pre-registration post), vacant on 7th June. Post is tenable for 6 months.

Applications, stating age and qualifications, with copies of at least 1 testimonial, should be sent immediately to the Hospital Secretary, St. Andrew's Hospital, Bow, E.3.

ST. CHARLES' HOSPITAL, Ladbroke-grove, W.10. (581 Beds.) Applications are invited for the post of Wholetime SURGICAL REGISTRAR. Hospital may be visited by direct appointment.

Application forms obtainable from, and returnable to, Secretary to Committee, Paddington Group Hospital Management Committee, Harrow-road, W.9, by 28th May, 1956.

ST. JAMES' HOSPITAL, Balham, London, S.W.12. Locum E.N.T. REGISTRAR required from 1st to 14th June inclusive.

Applications, giving full particulars, to Group Secretary at above address by 20th May.

ST. MARY'S HOSPITAL, W.2. Applications are invited for the post of Part-time OUTPATIENT SURGICAL ASSISTANT for 3 notional half-days per week (Wednesday, A.M., Friday, P.M., and Saturday, A.M.), graded Senior House Officer. This appointment is designed for men or women who have already passed their Primary F.R.C.S., and is ideally suited to those reading for the Final as a large number of clinical cases are available; it will be for a first period of 12 months as from a date to be arranged.

Applications, stating nationality, date of birth, permanent address, qualifications with dates, details and National Health Service gradings of previous and present appointments, together with the names and addresses of 3 referees, should reach ALAN POWDITCH, House Governor, not later than 30th May, 1956.

ST. MARY'S HOSPITAL, W.2. Applications are invited for the post of RESIDENT CLINICAL PATHOLOGIST, for a first period of 6 months from a date to be arranged; remuneration to be at Senior House Officer rates. Applicants should have held 2 House Officer appointments at this Hospital or another General Hospital approved by the Board of Governors, and preference will be given to those intending to specialise in pathology.

Applications, stating nationality, date of birth, permanent address, qualifications with dates, details and National Health Service gradings of previous and present appointments, together with the names and addresses of 3 referees, should reach ALAN POWDITCH, House Governor, not later than 23rd May, 1956.

ST. MARY'S HOSPITAL, Paddington, W.2, and THE NORTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. SENIOR REGISTRAR in General Surgery required on 1st September, 1956, for a combined appointment. The first and final years at St. Mary's Hospital and the intervening years at either Ashford, Paddington or West Middlesex Hospitals. Possession of higher surgical qualification essential. Hospitals may be visited by direct appointment.

Applications, stating nationality, date of birth, permanent address, qualifications with dates, details and National Health Service gradings of previous and present appointments, together with names and addresses of 3 referees, should reach ALAN POWDITCH, House Governor, not later than 30th May, 1956.

ST. THOMAS'S HOSPITAL, London, S.E.1. Registrar or SENIOR HOUSE OFFICER to the Radiotherapy Department for a period of 1 year in the first instance. Grade according to qualifications and experience.

Applications, including names and addresses of 2 referees, to the Clerk of the Governors by 26th May, 1956.

TOTTENHAM GROUP HOSPITAL MANAGEMENT COMMITTEE, The Green, London, N.15. RESIDENT OBSTETRIC HOUSE OFFICERS (third post) required at Bearsted Memorial Hospital (Jewish Maternity Hospital), Lordship-road, N.16, and at The Green, Hampton Court, for 6-month posts commencing 1st July, 1956. Both posts recognised for the D.Obst.R.C.O.G. Previous obstetric experience an advantage.

Application forms from the Secretary, to be returned by 2nd June, 1956.

THE HOSPITAL FOR SICK CHILDREN, Great Ormond-street, London, W.C.1. There will be a vacancy on 8th October, 1956, for a RESIDENT SENIOR DENTAL HOUSE SURGEON. The post is recognised for the Fellowship in Dental Surgery, Royal College of Surgeons. Experience is given in both oral surgery and orthodontics.

Further particulars and form of application, which must be returned not later than 11th June, 1956, are obtainable from the undersigned.

H. F. RUTHERFORD, House Governor and Secretary.

THE HOSPITAL FOR SICK CHILDREN, Great Ormond-street, London, W.C.1. There will be vacancies for the following Senior House Officers on 15th October, 1956:—

2 HOUSE PHYSICIANS

1 HOUSE SURGEON.

Further particulars and form of application, which must be returned not later than Monday, 11th June, 1956, are obtainable from the undersigned.

H. F. RUTHERFORD, House Governor and Secretary.

THE HOSPITAL FOR SICK CHILDREN, Great Ormond-street, London, W.C.1. There will be a vacancy on 16th September, 1956, for a JUNIOR RESIDENT ANÆSTHETIST (Senior House Officer).

Full particulars with form of application, which must be returned not later than Monday, 11th June, 1956, may be obtained from the undersigned.

H. F. RUTHERFORD, House Governor and Secretary.

WHIPPS CROSS HOSPITAL, London, E.11. Applications are invited for the following posts which become vacant 1st July.

Pre-registration HOUSE PHYSICIANS (2 posts), general medicine.

Pre-registration HOUSE SURGEONS (3 posts), general surgery.

HOUSE PHYSICIAN (post-registration) in the Group Geriatric Unit.

Application forms from the Hospital Secretary to be returned by 21st May, 1956.

WILLESDEN GENERAL HOSPITAL, Harlesden-road, N.W.10. RESIDENT HOUSE SURGEON required for 6 months from 15th June, 1956, plus 14 days Locum from 1st June, 1956. Pre-registration candidates eligible.

Applications, with full details and names of 2 referees, to Hospital Secretary by 16th May, 1956.

ABERDEEN MATERNITY HOSPITAL: ABERDEEN ROYAL INFIRMARY. Applications are invited for the post of SENIOR HOUSE OFFICER in the Department of Obstetrics and Gynæcology. The appointment is tenable for 1 year. Rotation of duties is arranged to meet the needs of clinical training. The post is recognised in both obstetrics and gynæcology for the M.R.C.O.G.

Applications, stating age, qualifications and experience, together with the names of 2 referees, should be sent to the Group Medical Superintendent, Royal Aberdeen Hospital for Sick Children, Westburn-drive, Aberdeen, within 10 days of appearance of this advertisement.

ALTON, HAMPSHIRE. LORD MAYOR TRELOAR ORTHOPÆDIC HOSPITAL. (340 Beds.) Applications invited from registered medical practitioners (Male or Female) for Whole-time SENIOR HOUSE OFFICER, vacant from end of June, 1956. Post provides experience in non-pulmonary tuberculosis and general orthopædics and includes some plastic surgery work. Accommodation available. Visit to Hospital welcome.

Applications to Secretary within 2 weeks of this advertisement.

ASHTON, HYDE AND GLOSSOP HOSPITAL MANAGEMENT COMMITTEE. MANCHESTER REGIONAL HOSPITAL BOARD. SENIOR HOUSE OFFICER (or REGISTRAR if suitably qualified) in General Medicine required, vacant early June.

Applications, with copies of 2 testimonials, to Group Secretary, General Hospital, Ashton-under-Lyne, Lancashire.

ASHFORD HOSPITAL, Ashford, Middlesex. Required, RESIDENT HOUSE SURGEON (Male) for Traumatic and Orthopædic Unit. Preference given to pre-registration candidates.

Applications, stating age, qualifications and experience with copies of up to 3 recent testimonials, to Medical Director of Hospital immediately.

AYLESBURY, BUCKINGHAMSHIRE. STOKE MANDEVILLE HOSPITAL. HOUSE SURGEON for Gynæcology Department. Post recognised for M.R.C.O.G., vacant 2nd June, 1956.

Applications from registered practitioners, with 2 testimonials, to the Administrative Officer as soon as possible.

BEDFORD GENERAL HOSPITAL. (437 Beds.) Pre-registration HOUSE SURGEON required. The appointment offers exceptional opportunities for general experience in busy acute surgical units.

Applications, stating age, experience, nationality, copies of 2 recent testimonials, to Group Secretary, 3, Kimbolton-road, Bedford.

BEDFORD GENERAL HOSPITAL. (437 Beds.) 2 resident Pre-registration HOUSE PHYSICIANS required approximately end May.

Applications, stating age, qualifications, experience, copies of 2 recent testimonials, to Group Secretary, Bedford Group Hospital Management Committee, 3, Kimbolton-road, Bedford.

BEVERLEY, YORKSHIRE. WESTWOOD HOSPITAL. ASSISTANT PATHOLOGIST (Senior House Officer grade) required in Area Laboratory with attendance at Branch Laboratory, Driffield. Offers experience all branches of pathology. Salary £745.

Detailed applications to Group Secretary.

BEVERLEY, YORKSHIRE. WESTWOOD HOSPITAL. (229 Beds.) ORTHOPÆDIC HOUSE SURGEON (first, second, or third post). Married accommodation available. Offers good opportunity for general experience in busy acute general hospital. Approved pre-registration post. Fully qualified practitioners may apply. Recognised for F.R.C.S. Vacant mid-May.

Apply to Group Secretary.

BIRMINGHAM ACCIDENT HOSPITAL. (215 Beds and 8 House Surgeons.) HOUSE SURGEON (resident), vacant 9th June. Recognised for purpose of casualty by R.C.S. (Eng.). Teaching programme by Consultant staff. Appointment for 6 months, some of which may be spent, at applicant's request, in 42-Bedded Medical Research Council's Burns Unit.

Apply by 25th May, 1956, to Administrator, naming 2 referees.

BIRMINGHAM, 18. DUDLEY ROAD HOSPITAL. (780 Beds.) SENIOR HOUSE OFFICER (anæsthetics) resident, required immediately. Recognised for D.A. and F.F.A.R.C.S. Extensive experience in anæsthetics not necessary. Duties include list and emergency work in general surgery, gynæcology, obstetrics, and E.N.T. at hospitals in Group.

Detailed applications, with copies of 3 recent testimonials, to Group Secretary.

BIRMINGHAM. MARSTON GREEN MATERNITY HOSPITAL, Berwicks-lane, Marston Green, near BIRMINGHAM. HOUSE SURGEON (obstetrics) required, vacant 1st July. 121 obstetric and 10 gynæcological beds. Recognised for Diploma and Obstetric part of M.R.C.O.G. Premature Baby Unit. Hospital affiliated to Birmingham Medical School for training of students.

Detailed applications, with copies of 3 recent testimonials, to Group Secretary, Dudley Road Hospital, Birmingham, 18.

BIRMINGHAM. THE UNITED BIRMINGHAM HOSPITALS. THE CHILDREN'S HOSPITAL, Ladywood-road, BIRMINGHAM, 16. Applications are invited for the post of ASSISTANT RESIDENT MEDICAL OFFICER (Senior House Officer), vacant 20th June, 1956, for 1 year. Main duty to take charge of Infants Block (60 Cots). Previous hospital experience of diseases of infancy is desirable and preference will be given to candidates holding the M.R.C.P.

Forms of application may be obtained from the House Governor and should be returned by 30th May, 1956.

G. A. PHALP, Secretary to the Board of Governors.

BIRMINGHAM. THE UNITED BIRMINGHAM HOSPITALS. THE QUEEN ELIZABETH HOSPITAL. Applications are invited for the post of MEDICAL REGISTRAR (Senior Registrar grade). The appointment is subject to annual review and the successful candidate may subsequently be required to spend not more than 2 years in a selected Hospital of the Birmingham Regional Hospital Board, in accordance with the arrangements for the interchange of Registrars agreed between the 2 Boards. The successful candidate may be required to be resident.

Forms of application may be obtained from, and should be returned not later than 22nd May, 1956, to, the Secretary, United Birmingham Hospitals, Queen Elizabeth Hospital, Edgbaston, Birmingham, 15.

BIRMINGHAM REGIONAL HOSPITAL BOARD.

(1) Coventry Group No. 20. Coventry and Warwickshire Hospital, Coventry

REGISTRAR in Obstetrics and Gynæcology, for Coventry and Warwickshire Hospital (354 Beds). Resident. Experience specialty essential. Higher qualification desirable. Hospital recognised for M.R.C.O.G./D.Obst.R.C.O.G.

(2) Highcroft Hall Group, Highcroft Hall Hospital, Birmingham, 23

REGISTRAR in Psychiatry. All modern forms of treatment. Opportunities for outpatient clinic work. Resident/non-resident.

(3) Stafford Group, 13, Foregate-street, Stafford

REGISTRAR in Pathology. Duties mainly at Staffordshire General Infirmary (175 Beds). Experience specialty/higher qualification desirable.

Application forms from Group Secretary, to be returned before 21st May, 1956.

BIRMINGHAM, 9. YARDLEY GREEN HOSPITAL. THORACIC SURGICAL UNIT. (66 Beds.) Vacancy for SENIOR HOUSE OFFICER. No previous experience in thoracic surgery necessary.

Applications, stating age, qualifications, training, and experience, together with names of 2 referees, to be addressed to Group Secretary, Yardley Green Hospital, Birmingham, 9.

BISHOP AUCKLAND. THE GENERAL HOSPITAL. (350 Beds.) HOUSE SURGEON required. Recognised pre-registration post. Immediate vacancy.

Apply, naming 2 referees, to Group Secretary, South West Durham Hospital Management Committee, at above address.

BLACKPOOL. VICTORIA HOSPITAL. (348 Beds.) Applications are invited for the pre-registration post of RESIDENT HOUSE OFFICER (orthopædic and casualty), vacant on 1st July next, which is recognised for the F.R.C.S. This is an acute hospital serving the whole of the Blackpool and Fylde area.

Applications, stating age, qualifications, experience, together with the names and addresses of 2 referees, should be addressed to the Hospital Secretary.

BOURNEMOUTH (near). CHRISTCHURCH HOSPITAL, CHRISTCHURCH, HANTS. BOURNEMOUTH AND EAST DORSET HOSPITAL MANAGEMENT COMMITTEE. 2 HOUSE PHYSICIANS (pre-registration interns) required for general medicine for posts becoming vacant on 6th and 12th June, 1956, at the above Hospital of 259 Beds (including 79 acute medical, 34 pædiatric, 6 chest diagnostic and a Geriatric Unit). Duties also include attendance at outpatient clinics at the Royal Victoria Hospital, Boscombe, Bournemouth.

Applications, with copies of testimonials, to the Hospital Secretary at the Hospital.

BOURNEMOUTH. ROYAL VICTORIA HOSPITAL, Shelley-road, BOSCOMBE. BOURNEMOUTH AND EAST DORSET HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the appointment of HOUSE SURGEON for general and thoracic surgery. The post, which is recognised for the F.R.C.S. examination and pre-registration purposes, becomes vacant on 12th June, 1956.

Applications to the Hospital Secretary at the Hospital.

BOURNEMOUTH. ROYAL VICTORIA HOSPITAL, Shelley-road, BOSCOMBE. BOURNEMOUTH AND EAST DORSET HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the appointment of GENERAL HOUSE SURGEON. The post, which becomes vacant on 19th May, 1956, is recognised for the F.R.C.S. examination and for pre-registration purposes.

Applications to the Hospital Secretary at the Hospital.

BRADFORD, YORKSHIRE. ROYAL EYE AND EAR HOSPITAL. (105 Beds.) SENIOR HOUSE OFFICER required for E.N.T. Department of 56 Beds. Recognised for D.L.O. and F.R.C.S. Salary £745 p.a., less £150 p.a. residential emoluments.

Applications, stating age, nationality, qualifications and experience with copy testimonials, to Secretary, Bradford Royal Infirmary.

BROMLEY HOSPITAL, Kent. Senior House Officer in Anæsthetics (qualified minimum 1 year) for duty at Group hospitals, residing at Bromley Hospital, required for 12 months from 17th June. Recognised for D.A. and F.F.A.R.C.S. Deduction for residence £150 p.a.

Apply, naming 3 referees, to Administrative Officer.

BRISTOL. HAM GREEN HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of ASSISTANT VENEREOLOGIST (Junior Hospital Medical Officer), Male, in the Bristol Group of clinics.

Applications, giving details of qualifications, experience, &c., and names and addresses of 2 referees, to be forwarded to the Secretary, Ham Green Hospital, Pill, near Bristol.

BRISTOL (near). HAM GREEN HOSPITAL, Pill, BRISTOL. Applications are invited for the post of SENIOR HOUSE OFFICER in the tuberculosis wards (188 Beds) of the above Hospital. The Hospital is fully equipped for the modern treatment of pulmonary tuberculosis including regular major thoracic surgery. Appointment for 1 year renewable.

Apply Secretary, Ham Green Hospital, Pill, near Bristol.

BRISTOL. COSSHAM AND FRENCHAY HOSPITAL MANAGEMENT COMMITTEE. HOUSE SURGEON in General Surgery required at Cossham Memorial Hospital, Kingswood, Bristol, now until 31st July, 1956. 88 Beds acute medicine and surgery. Recognised pre-registration post but fully registered practitioners considered.

Apply to Group Secretary, Frenchay Hospital, Bristol, quoting qualifications, experience and names of 2 referees.

BRISTOL. SOUTHMEAD GENERAL HOSPITAL GROUP MANAGEMENT COMMITTEE. Required at Southmead Hospital (571 Beds, including 133 maternity) RESIDENT SENIOR HOUSE OFFICER (anæsthetics). Post recognised for F.F.A.R.C.S.

Applications to be made to the Group Secretary, Southmead Hospital, Bristol.

BRISTOL. SOUTHMEAD GENERAL HOSPITAL GROUP MANAGEMENT COMMITTEE. Applications are invited for the following appointments which will become vacant on 1st August, 1956 :—

Southmead Hospital, Bristol (571 Beds including 133 maternity)

2 SENIOR HOUSE OFFICERS (casualty) (1 will also have duties as Orthopædic House Surgeon and the other as E.N.T. House Surgeon). Posts recognised for F.R.C.S. examination.

2 HOUSE OFFICERS (casualty) (1 will also have duties as Orthopædic House Surgeon and the other as E.N.T. House Surgeon). Posts recognised for F.R.C.S. examination.

3 HOUSE SURGEONS. Posts recognised for F.R.C.S. examination.

4 HOUSE PHYSICIANS.

1 HOUSE SURGEON (gynæcology). Post recognised for M.R.C.O.G. examination.

3 HOUSE OFFICERS (obstetrics). Posts recognised for M.R.C.O.G. examination.

2 HOUSE PHYSICIANS (pædiatrics). Posts recognised for D.C.H.

Applications are also invited for 1 HOUSE OFFICER (obstetrics) at Southmead Hospital for 6 months commencing 1st November, 1956.

Applications, on forms to be obtained from the undersigned, to be returned not later than 16th June, 1956.

C. C. HANCOCK, Group Secretary.

Southmead Hospital, Bristol.

BRIDGE OF EARN HOSPITAL, Perthshire. Applications are invited for the following posts :—

1 HOUSE SURGEON (Fracture and Orthopædic Unit).

1 SENIOR HOUSE SURGEON (Fracture and Orthopædic Unit).

Junior post is recognised for Pre-registration Hospital Service. Both posts recognised by the Royal College of Surgeons under regulations for the F.R.C.S.

Applications, giving age, qualifications, experience, and the names of 2 referees, should be sent to the Group Medical Superintendent, Perth Royal Infirmary, Perth.

BRIGHTON. ROYAL SUSSEX COUNTY HOSPITAL. (312 Beds.) HOUSE SURGEON required mid-May. Recognised for pre-registration and F.R.C.S.

Applications, stating usual particulars, and naming 2 referees, to the Administrative Officer, Royal Sussex County Hospital, Brighton, 7.

BURY ST. EDMUNDS. WEST SUFFOLK GENERAL HOSPITAL. (285 Beds.) Applications invited for the following posts :—

(*a*) SENIOR HOUSE OFFICER for orthopædic and casualty duties. Recognised for F.R.C.S. (Surgical). Vacant early July. There is also a Junior Hospital Medical Officer Casualty Officer.

(*b*) HOUSE SURGEON for general surgical and other duties, vacant late May.

(*c*) HOUSE SURGEON for general surgical duties. Recognised for F.R.C.S. Vacant early July.

(*d*) HOUSE SURGEON for obstetric and gynæcological duties. Recognised for D.Obst.R.C.O.G. Vacant early August.

(*e*) HOUSE PHYSICIAN for pædiatric and general medical duties, vacant early July.

(*f*) HOUSE PHYSICIAN for general medical duties, vacant late May.

All posts except (*a*) are recognised for pre-registration, but for post (*d*) it is considered advisable to have held 1 previous House Officer post.

Inquiries and applications, with names and addresses of 3 referees, should be sent to the Hospital Secretary.

CHESTERFIELD. WALTON SANATORIUM. (146 Beds.) SHEFFIELD REGIONAL HOSPITAL BOARD. Whole-time REGISTRAR (chest diseases) required. House available at reasonable rental. All forms of major thoracic surgery are undertaken at this Hospital. Some clinic work would be associated under the supervision of the Consultant concerned. Appointment for 1 year in first instance.

Apply to Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, by 21st May, 1956, giving age, nationality, qualifications, present and previous appointments with dates, naming 3 referees.

CAMBRIDGE. ADDENBROOKE'S HOSPITAL. ANÆSTHETIC REGISTRAR (non-resident), for 1 year in the first instance from 1st June, renewable for second year.

Apply, with full particulars and names of 3 referees, to Secretary by 23rd May.

CARMARTHEN. WEST WALES GENERAL HOSPITAL. (188 Beds.) WEST WALES HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of SENIOR HOUSE OFFICER (orthopædic and traumatic surgery) which is now vacant. Salary and conditions of service as laid down by Ministry of Health.

Applications, stating age, qualifications, experience, nationality with names and addresses of 3 referees, to the Group Secretary, West Wales Hospital Management Committee, Glangwili, Carmarthen.

CARSHALTON, SURREY. QUEEN MARY'S HOSPITAL FOR CHILDREN. (General Children's Hospital of 818 Beds.) Whole-time REGISTRAR required for surgical and orthopædic duties. Position vacant at the end of May. Applicants are invited to visit the Hospital by appointment with the Physician-Superintendent.

Applications, on forms obtainable from the Group Secretary, should be submitted as soon as possible.

CARSHALTON. QUEEN MARY'S HOSPITAL FOR CHILDREN. (A General Children's Hospital of 818 Beds.) HOUSE SURGEON (resident) required for 6 months. Applicants must have completed 12 months Pre-registration Service.

Applications, stating age, qualifications, together with 3 recent testimonials, should be submitted to the Group Secretary by 25th May, 1956.

CHERTSEY, SURREY. ST. PETER'S HOSPITAL (late Botley's Park War Hospital). (430 Beds.) RESIDENT HOUSE SURGEON (Senior House Officer or Intern) required for the Gynæcological (30 Beds) and E.N.T. (16 Beds) Departments. Duties to commence immediately. Salary in accordance with terms and conditions of National Health Service.

Applications, together with names and addresses of referees, to be sent to the Physician-Superintendent, St. Peter's Hospital, Chertsey, as soon as possible.

CHELMSFORD. ST. JOHN'S HOSPITAL. House PHYSICIAN (pre-registration, first, second, or third appointment), Male or Female, to commence as soon as possible.

Applications, stating age, nationality, qualifications, and experience, together with recent testimonials, to the Secretary, Group Hospital Management Committee, Chelmsford and Essex Hospital, London-road, Chelmsford.

CHELMSFORD AND ESSEX HOSPITAL. (162 Beds.) Applications are invited for the post of RESIDENT HOUSE PHYSICIAN (pre-registration post) to work in the general medical wards of the Hospital. Duties will commence mid-June.

Applications, together with 2 recent testimonials, to the Secretary, Chelmsford Hospital Management Committee, London-road, Chelmsford.

CHELMSFORD AND ESSEX HOSPITAL. (162 Beds.) Applications invited from pre-registration candidates, or others, for the post of HOUSE SURGEON. Recognised for F.R.C.S. Tenable for 6 months from 16th June. The successful candidate will have the option of proceeding immediately to the post of HOUSE PHYSICIAN for a further period of 6 months.

Applications, together with 2 recent testimonials, to the Secretary, Chelmsford Hospital Management Committee, London-road, Chelmsford.

CHELTENHAM GENERAL HOSPITAL. Required, 2 HOUSE SURGEONS (pre- or post-registration). The posts offer a wide experience in general surgery ; gynæcology ; orthopædic surgery ; and genito-urinary surgery, and are vacant now. Both posts are recognised for the F.R.C.S. The post of house physician would probably be open to a House Surgeon on completion of the House Surgeon post.

Apply Secretary, General Hospital, Cheltenham.

CHESTER. BARROWMORE HOSPITAL, Great Barrow, CHESTER. (173 Beds.) Male SENIOR HOUSE OFFICER (medical) required. Salary, &c., according to scale. The Hospital is modern in all respects and contains Regional Thoracic Surgical Unit. Applications from ex-patients considered.

Apply, with names of 2 referees, to Physician-Superintendent, from whom any further information may be obtained.

COVENTRY AND WARWICKSHIRE HOSPITAL. (354 Beds.) CASUALTY AND ACCIDENT OFFICER (Junior Hospital Medical Officer status). Recognised F.R.C.S. Resident.

Applications to Secretary, Group 20 Hospital Management Committee, Coventry and Warwickshire Hospital, Coventry.

CREWE AND DISTRICT MEMORIAL HOSPITAL (108 Beds—Acute), ALVASTON HOSPITAL, NANTWICH (34 Beds). RESIDENT HOUSE OFFICER (surgical) required. Approved for F.R.C.S. Normally tenable for 6 months. Salary £425–£525, less a deduction for residential emoluments. Preference will be given to pre-registration applicants.

Apply, stating age, qualifications and experience with the names of 2 referees, to the Group Secretary, South Cheshire Hospital Management Committee, Barony Hospital, Nantwich, Cheshire.

CROYDON. MAYDAY HOSPITAL. (611 Beds.) House SURGEON (pre-registration) for period of 6 months commencing 5th June, 1956. Post recognised for F.R.C.S. Preference given to candidates who have held previous House Officer post.

Application forms obtainable from GEORGE A. PAINES, Group Secretary, Hospital Management Committee, General Hospital, London-road, Croydon, to be returned immediately.

CROYDON. MAYDAY HOSPITAL. (611 Beds.) House PHYSICIAN (pre-registration) for a period of 6 months from 1st June.

Application forms obtainable from Group Secretary, Croydon Group Hospital Management Committee, General Hospital, Croydon, to be returned as soon as possible.

CUCKFIELD HOSPITAL, Cuckfield, near Haywards HEATH, SUSSEX. RESIDENT JUNIOR HOUSE SURGEON appointment now vacant. Pre-registration post. Health Service terms and conditions.

Applications, stating age, nationality, qualifications and experience with names of 2 referees, to the Group Secretary, Mid-Sussex Hospital Management Committee, as soon as possible.

DORKING GENERAL HOSPITAL, Horsham-road, DORKING, SURREY. REDHILL GROUP HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of SENIOR HOUSE OFFICER (general surgery, orthopædics and E.N.T.). Married quarters available.

Apply, with copies of 2 recent testimonials, to Medical Superintendent.

DARLINGTON MEMORIAL HOSPITAL. Applications are invited from Male or Female practitioners with experience for the post of SENIOR HOUSE OFFICER (surgery). Establishment: 1 Registrar, 1 Senior House Officer, 2 House Officers (90 surgical beds). The post is recognised for the F.R.C.S. (Eng.). Salary £745 p.a., deduction of £153 for full residential emoluments. The post is tenable for 12 months and is renewable annually.

Apply with references, stating age and experience, to—
G. W. BECKWITH, Group Secretary.

DERBY. DERBYSHIRE ROYAL INFIRMARY. (416 Beds. Recognised for the F.R.C.S.) SHEFFIELD REGIONAL HOSPITAL BOARD. Whole-time RESIDENT/NON-RESIDENT REGISTRAR (ophthalmology) required. Appointment for 1 year in first instance.

Apply to Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, by 21st May, 1956, giving age, nationality, qualifications present and previous appointments with dates, naming 3 referees.

DERBY. DERBYSHIRE CHILDREN'S HOSPITAL. (86 Beds.)

(1) SENIOR HOUSE OFFICER, vacant 23rd June.
(2) HOUSE PHYSICIAN (pre-registration) or SENIOR HOUSE OFFICER, vacant 25th July.
(3) HOUSE SURGEON (pre-registration) or SENIOR HOUSE OFFICER, vacant 29th July.

All posts recognised for D.C.H. Appointments to posts (2) and (3) will only be made on the Senior House Officer grade if there are no suitable pre-registration candidates, and applicants should state the type of registration they hold.

Applications, clearly indicating post desired, together with 2 names for reference, should be sent immediately to Group Secretary, No. 1 Hospital Management Committee, Babington-lane, Derby.

DEWSBURY, BATLEY AND MIRFIELD HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the position of SENIOR HOUSE OFFICER in Dermatology for work in the Dewsbury, Wakefield and Pontefract Groups, which will become vacant on 11th May, 1956. The position can be resident or non-resident as required. Salary and conditions of service are in accordance with national recommendations, and the post is subject to the Health Service and Superannuation Acts.

Applications, giving full details of qualifications, experience and previous posts, together with the names and addresses of 3 referees, should be addressed to the Group Secretary, 20, Oxford-road, Dewsbury, Yorks.

EAST ANGLIAN REGIONAL HOSPITAL BOARD. RADIOLOGICAL REGISTRAR, West Suffolk Group of hospitals. Main hospital West Suffolk General, Bury St. Edmunds (285 Beds). Successful applicant will work directly under the Consultant Radiologist. Appointment for 1 year, renewable for second year.

Applications, stating age, experience, and the names of 3 referees, to the Board's Senior Administrative Medical Officer, 117, Chesterton-road, Cambridge, by 21st May, 1956. Candidates are invited to visit the Hospital by direct arrangement with Hospital Management Committee Secretary at the Hospital.

EAST KILBRIDE, LANARKSHIRE. HAIRMYRES HOSPITAL. Applications are invited for the post of SENIOR HOUSE OFFICER (anæsthetics) at the above Hospital. Experience in anæsthetics is desirable but not essential.

Applications, stating age, qualifications and experience, with the names of 2 referees, should be sent to the Physician-Superintendent, Hairmyres Hospital.

EDGWARE GENERAL HOSPITAL, Edgware, Middlesex. (715 Beds.) Applications are invited for the appointment of SENIOR HOUSE OFFICER in Geriatrics. The duties will involve the medical treatment and rehabilitation of elderly sick in a new and developing department of the hospital. There are facilities for postgraduate study.

Applications, stating age, qualifications, experience, and the names and addresses of 2 referees, to Group Secretary by 19th May, 1956.

EDGWARE GENERAL HOSPITAL, Edgware, Middlesex. 2 RESIDENT HOUSE PHYSICIANS for above Hospital. Posts vacant 13th and 20th June, 1956. 6 months appointments. Posts recognised for pre-registration purposes.

Applications, stating age, qualifications, experience and enclosing copies of up to 3 recent testimonials, to Medical Director of Hospital by 19th May, 1956.

EDGWARE GENERAL HOSPITAL, Edgware, Middlesex. Locum CASUALTY JUNIOR HOSPITAL MEDICAL OFFICER (non-resident) required from 8th to 21st June, 1956, inclusive, and Locum CASUALTY SENIOR HOUSE OFFICER (resident) required from 8th to 25th June, 1956, at above Hospital.

Apply immediately to Medical Director (Telephone No. EDGware 2381).

EDGWARE GENERAL HOSPITAL, Edgware, Middlesex. 2 RESIDENT OBSTETRIC HOUSE SURGEONS for above Hospital. Posts vacant 12th and 18th July, 1956. 6 months appointments. Both posts recognised for M.R.C.O.G.—1 post for pre-registration purposes.

Applications, stating age, qualifications, experience, and enclosing copies of up to 3 recent testimonials, to Medical Director of Hospital by 26th May, 1956.

EDGWARE GENERAL HOSPITAL, Edgware, Middlesex. RESIDENT HOUSE SURGEON (general and genito-urinary surgery) for above Hospital. Post vacant 11th July, 1956. 6 months appointment. Post recognised for F.R.C.S. and pre-registration purposes.

Applications, stating age, qualifications, experience, and enclosing copies of up to 3 recent testimonials, to Medical Director of Hospital by 26th May, 1956.

EDGWARE GENERAL HOSPITAL. (715 Beds.) North WEST METROPOLITAN REGIONAL HOSPITAL BOARD. Whole-time NON-RESIDENT PÆDIATRIC REGISTRAR required at above Hospital.—32 pædiatric beds. Department is also responsible for the supervision of 64 Cots in Maternity Unit and 50 Cots at Bushey Maternity Hospital. Hospital may be visited by direct appointment with Medical Director.

Application forms obtainable from, and returnable to, Group Secretary, Edgware General Hospital, Edgware, Middlesex, by 26th May, 1956.

ENFIELD, MIDDLESEX. CHASE FARM HOSPITAL. RESIDENT HOUSE PHYSICIAN (approved pre-registration), vacant 6th July, 1956. General medical duties. 6 months appointment.

Applications, with the names and addresses of 2 referees, to the Group Secretary, Enfield Group Hospital Management Committee, at Chase Farm Hospital, quoting reference 'B.'

ENFIELD, MIDDLESEX. CHASE FARM HOSPITAL. RESIDENT HOUSE PHYSICIAN (approved pre-registration), vacant 12th July, 1956. General medical duties. 6 months appointment.

Applications, with the names and addresses of 2 referees, to the Group Secretary, Enfield Group Hospital Management Committee, at Chase Farm Hospital, quoting reference "S."

ENFIELD, MIDDLESEX. WAR MEMORIAL HOSPITAL, CHASE SIDE. RESIDENT SENIOR HOUSE OFFICER required for general medical and surgical duties in this Acute General Hospital of 61 Beds. Vacant now. 12 months appointment. Deduction of £160 p.a. for residential emoluments.

Applications, with names and addresses of 2 referees, to the Group Secretary, Enfield Group Hospital Management Committee, Chase Farm Hospital, The Ridgeway, Enfield, Middlesex.

EPPING. ST. MARGARET'S HOSPITAL. (485 Beds.) HOUSE PHYSICIAN (pre-registration post) to Consultant in General Medicine. Post vacant 1st July, 1956.

Applications, with copies of testimonials, including 1 from medical school, to reach the Group Secretary, Epping Group Hospital Management Committee, "Oak Cottage," The Plain, Epping, Essex, by 26th May, 1956.

EPPING. ST. MARGARET'S HOSPITAL. (485 Beds.) HOUSE SURGEON (pre- or post-registration) to very busy General Surgical Unit. Hospital within easy reach of Central London. Post vacant 1st July, 1956.

Applications, with copies of testimonials, including 1 from medical school, to reach the Group Secretary, Epping Group Hospital Management Committee, "Oak Cottage," The Plain, Epping, Essex, by 26th May, 1956.

EPSOM, SURREY. HORTON HOSPITAL. A vacancy exists for a SENIOR HOUSE OFFICER (salary £745 p.a.). Applicants must have held a house appointment in a General Hospital. Single resident accommodation is available. The Hospital deals with all types of psychiatric illness. There is a special unit (The Mott Clinic) for the treatment of neurosyphilis. Facilities are afforded for attending courses of instruction in London for the D.P.M.

Applications, with the names and addresses of 2 referees, should be sent to the Physician-Superintendent not later than 14 days after the appearance of this advertisement.

EPSOM DISTRICT HOSPITAL, Dorking-road, Epsom, SURREY. RESIDENT HOUSE SURGEON required 1st July, for Orthopædic, E.N.T. and Eye Department. Pre-registration post.

Applications, stating age, qualifications and experience with copies of 2 recent testimonials, should be sent immediately to Group Secretary at above address.

EXETER. ROYAL DEVON AND EXETER HOSPITAL. Applications are invited from pre-registration and registered medical practitioners for the post of HOUSE SURGEON (general surgery) vacant 18th June, 1956.

Applications, with copies of recent testimonials, to the Hospital Secretary.

EXETER. ROYAL DEVON AND EXETER HOSPITAL. Applications are invited from registered medical practitioners, Male and Female, for the appointment of SENIOR HOUSE OFFICER in Clinical Pathology (resident), vacant now. The successful candidate will be responsible for emergency pathological and blood transfusion duties, and will work, under the Area Pathologist, in different branches of Clinical Pathology.

Applications, with names of 2 referees, to the Hospital Secretary.

GLASGOW, S.W.1. DAVID ELDER INFIRMARY. (50 gynæcological beds.) JUNIOR HOUSE OFFICER required immediately. Post recognised as pre-registration appointment. Recognised for M.R.C.O.G.

Applications, in writing, to Medical Superintendent.

GLASGOW NORTHERN HOSPITALS BOARD OF MANAGEMENT. Applications are invited for the post of SENIOR HOUSE OFFICER in Dermatology at Stobhill Hospital, Glasgow. The appointment will be for 1 year in the first instance.

Applications, stating age, qualifications, experience, and present appointment and naming 3 referees, to be lodged with the Secretary, 13, Woodside-place, Glasgow, C.3, by 15th May, 1956.

GREENOCK, RAVENSCRAIG (MENTAL AND GEN-ERAL) HOSPITAL. (472 Beds.) JUNIOR HOSPITAL MEDICAL OFFICERS (2). Resident posts. Mental and general experience to be gained. Hospital is recognised as a training centre for the D.P.M. examination.

Applications, in writing, to the Physician-Superintendent as soon as possible.

GRIMSBY GENERAL HOSPITAL. Grimsby Hospital MANAGEMENT COMMITTEE. Applications are invited for the post of SENIOR HOUSE OFFICER (orthopædic). Orthopædic Unit of 74 Beds. Up-to-date Medical Library and reading facilities available.

Applications, with names of 2 referees, to Hospital Secretary.

GRIMSBY GENERAL HOSPITAL. (238 Beds.) Sheffield REGIONAL HOSPITAL BOARD. Whole-time RESIDENT or NON-RESIDENT REGISTRAR (orthopædics) required. The post is recognised to the extent of 6 months for the F.R.C.S. and the Hospital has an excellent reference library.

Apply to Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, by 21st May, 1956, giving age, nationality, qualifications, present and previous appointments with dates, naming 3 referees.

GRIMSBY GENERAL HOSPITAL. Grimsby Hospital MANAGEMENT COMMITTEE. SENIOR HOUSE OFFICER for casualty duties required. Resident post. Recognised by Royal College of Surgeons for the Final Fellowship examination. Night duty on rota with all other resident staff. Establishment consists of Senior Hospital Medical Officer (casualty) and the post now being advertised. The Hospital possesses a well-equipped Medical Library.

Applications, with names and addresses of 2 referees, to the Hospital Secretary, Grimsby General Hospital.

HAILSHAM. HELLINGLY MENTAL HOSPITAL. HAILSHAM HOSPITAL MANAGEMENT COMMITTEE. JUNIOR HOSPITAL MEDICAL OFFICER. Single residential accommodation available. Salary £775–£1075 p.a., commencing point in accordance with experience. Post offers experience in all branches of psychiatry, including all forms of modern treatment. High admission-rate. Hospital recognised for D.P.M.

Applications, stating age, qualifications and appointments held, to the Medical Superintendent, Hellingly Hospital, Hailsham, Sussex.

HALIFAX GENERAL HOSPITAL. (425 Beds.) House SURGEON (general surgery) required. Approved pre-registration appointment. Post now vacant.

Applications to the Group Secretary, Royal Halifax Infirmary, Halifax.

HARROGATE AND DISTRICT GENERAL HOSPITAL. (253 Beds.) Applications are invited for the post of SENIOR HOUSE OFFICER (casualty and orthopædic surgery). Recognised for F.R.C.S. Immediate vacancy.

Applications, together with the names of 2 referees, should be forwarded to the Hospital Secretary, Harrogate and District General Hospital, Harrogate, Yorkshire.

HASTINGS GROUP HOSPITAL MANAGEMENT COMMITTEE. SENIOR HOUSE OFFICER (anæsthetics) for duties within the Group. Post vacant about 18th May, is recognised for Diploma in Anæsthetics. Salary £745 p.a.

Apply to Group Secretary, 11, Holmesdale-gardens, Hastings.

HASTINGS. ROYAL EAST SUSSEX HOSPITAL. (150 Beds.) HOUSE PHYSICIAN required. Pre-registration post, vacant 17th June. National scale of salary.

Apply to Hospital Administrator.

HASTINGS. ROYAL EAST SUSSEX HOSPITAL. (150 Beds.) HOUSE SURGEON required. Pre-registration post, vacant now. National scale of salary.

Apply to Hospital Administrator.

HASTINGS. ST. HELEN'S HOSPITAL. (493 Beds.) HOUSE SURGEON (resident) required. Pre-registration post, vacant now. National scale of salary.

Apply to Hospital Administrator immediately.

HAVERFORDWEST. PEMBROKE COUNTY WAR MEMORIAL HOSPITAL. (163 Beds. Recognised by the Royal College of Surgeons, and for Pre-registration Service.) WEST WALES HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of RESIDENT SENIOR HOUSE OFFICER (surgical), which is now vacant. Salary and conditions of service as laid down by the Ministry of Health.

Applications, stating age, qualifications, experience, nationality, with names and addresses of 3 referees, to the Group Secretary, West Wales Hospital Management Committee, Glangwili, Carmarthen.

HEMEL HEMPSTEAD. WEST HERTS AND ST. PAUL'S HOSPITALS. NORTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. OBSTETRICAL AND GYNÆCOLOGICAL REGISTRAR (resident) required at above Hospitals which may be visited by direct appointment. Post vacant early July.

Application form obtainable from, and returnable to, Secretary, West Herts Group Hospital Management Committee, 9, Rickmansworth-road, Watford, Herts, by not later than 10 days after the appearance of this advertisement.

HEMEL HEMPSTEAD, HERTFORDSHIRE. WEST HERTS HOSPITAL. CASUALTY OFFICER (Junior Hospital Medical Officer) required.

Applications, stating 2 names for reference, should be sent to the Hospital Secretary.

HERTFORD COUNTY HOSPITAL. (171 Beds. Hospital situated 21 miles from London.) Applications are invited for appointment of RESIDENT HOUSE PHYSICIAN (Male or Female), second post held. Recognised pre-registration post. 6 months appointment. Preference given to applicants who have held resident surgical or medical posts in general hospital. Duties to commence 19th June, 1956.

Applications to Group Secretary, Hertford Hospital Management Committee, County Hospital, Hertford, Herts.

HOLT, NORFOLK. KELLING HOSPITAL AND DEPARTMENT OF THORACIC SURGERY. Applications are invited for the following posts which are now vacant.

(1) Locum JUNIOR HOSPITAL MEDICAL OFFICER (6–9 months).

(2) SENIOR HOUSE OFFICER.

This Hospital (180 Beds) deals with tuberculous and non-tuberculous chest conditions and offers excellent experience in chest medicine and thoracic surgery.

Applications, stating age, sex, qualifications, nationality and experience, together with names of 2 referees, to the Group Secretary, Cromer Area Hospital Management Committee, Cromer, Norfolk, who will be pleased to supply any other information concerning the appointments.

HENLEY-ON-THAMES, OXFORDSHIRE. PEPPARD CHEST HOSPITAL. (236 Beds.) Applications are invited for the post of JUNIOR HOSPITAL MEDICAL OFFICER. Resident accommodation available for a single applicant. Further details may be obtained from the Physician-Superintendent.

Applications, with the names of 2 referees, should be addressed to the Acting Group Secretary, Reading and District Hospital Management Committee, 3, Craven-road, Reading.

HILLINGDON HOSPITAL, near Uxbridge, Middlesex. (General—621 Beds.) PÆDIATRIC REGISTRAR required. Previous pædiatric experience essential. Duties include experience in Children's Medical Ward, in Neonatal Unit, and Pædiatric Outpatient's Clinics. Unit recognised for D.C.H. Candidates may visit Hospital by direct appointment.

Application forms available from, and returnable to, Group Secretary, Uxbridge Group Hospital Management Committee, The Furze, Field Heath-road, near Uxbridge, Middlesex, by 21st May.

HILLINGDON HOSPITAL, near Uxbridge, Middlesex. (General—621 Beds.) 3 HOUSE SURGEONS required in General Surgery. General and traumatic, general and gastro-enterology, and general and genito-urinary. All posts are recognised for the F.R.C.S. and for Pre-registration Service. Posts vacant early June.

Apply, together with copies of not more than 3 recent testimonials, to Medical Director by 21st May.

HULL A GROUP HOSPITAL MANAGEMENT COM-MITTEE. HOUSE PHYSICIAN (Pædiatric Unit). Duties at Victoria Children's Hospital for 3 months, followed by 3 months on the pædiatric wards, Western General Hospital. An interesting and varied post which includes outpatient and casualty work. This appointment, which commences on 1st July, 1956, is recognised for the D.C.H.

Apply, giving experience, testimonials, &c., to the Secretary, Victoria Hospital for Sick Children, Park-street, Hull.

HULL. KINGSTON GENERAL HOSPITAL. (419 Beds.) HULL A GROUP HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the appointment of HOUSE SURGEON—this post includes gynæcology, E.N.T. and general surgery. Pre-registration post. Vacant now.

Applications, giving full details, and copies of 2 recent testimonials, to the Hospital Secretary.

HUNTINGDON COUNTY HOSPITAL. Applications are invited for the post of HOUSE OFFICER (surgical) vacant mid-June. Post recognised for pre-registration purposes.

Apply, with full particulars and names of 2 referees, to Secretary, County Hospital, Huntingdon.

ILFORD. KING GEORGE HOSPITAL, Eastern-avenue. There will be a vacancy for a HOUSE SURGEON at above Hospital on 15th July, 1956. First or second post pre-registration. The post will be tenable for 6 months.

Applications, giving full particulars and accompanied by testimonials, should be sent to the undersigned within 7 days of the appearance of this advertisement.

H. F. HARRIS, Group Secretary, Ilford
and Barking Group Hospital Management Committee.

ILFORD. KING GEORGE HOSPITAL, Eastern-avenue. There will be a vacancy for a HOUSE PHYSICIAN at above Hospital on 28th June, 1956. First or second post pre-registration. The post will be tenable for 6 months.

Applications, giving full particulars and accompanied by testimonials, should be sent to the undersigned within 7 days of the appearance of this advertisement.

H. F. HARRIS, Group Secretary, Ilford
and Barking Group Hospital Management Committee.

IPSWICH AND EAST SUFFOLK HOSPITAL, Anglesea ROAD WING. (356 Beds.) Applications are invited for the post of HOUSE SURGEON to the E.N.T. and Ophthalmic Departments, vacant on 13th June, 1956. The post is recognised for pre-registration and for the D.L.O. examination.

Applications, giving full particulars and copies of recent testimonials, to Hospital Secretary.

IPSWICH AND EAST SUFFOLK HOSPITAL, Anglesea ROAD WING. (356 Beds.) Applications are invited for the post of HOUSE SURGEON to the Fracture and Orthopædic Department, vacant on 13th June, 1956. Approved pre-registration post.

Applications, with copies of recent testimonials, to the Hospital Secretary.

IPSWICH AND EAST SUFFOLK HOSPITAL. Anglesea ROAD WING. (356 Beds.) Applications are invited for the post of HOUSE SURGEON to the Senior General Consulting Surgeon. The post is recognised for pre-registration and for the F.R.C.S. examinations.

Applications, with copies of recent testimonials, to Hospital Secretary.

IPSWICH AND EAST SUFFOLK HOSPITAL. Anglesea ROAD WING. (356 Beds.) Applications are invited for the post of HOUSE SURGEON to the General Consultant Surgeon, vacant on 12th May, 1956. The post is recognised for pre-registration and for the F.R.C.S. examinations.

Applications, with copies of recent testimonials, to the Hospital Secretary.

IPSWICH AND EAST SUFFOLK HOSPITAL. Anglesea ROAD WING. (356 Beds.) Applications are invited for the post of CASUALTY OFFICER (Senior House Officer grade), vacant on 12th June, 1956. The post is recognised for the F.R.C.S. examination.

Applications, stating age and nationality, together with copies of recent testimonials, to Hospital Secretary.

ISLEWORTH. WEST MIDDLESEX HOSPITAL. House OFFICER (pre-registration), required for Orthopædic Unit. Post recognised for F.R.C.S. Resident.

Applications, stating age, nationality, qualifications and copies of up to 2 recent testimonials, to Group Secretary, South West Middlesex Hospital Management Committee, West Middlesex Hospital, Isleworth, Middlesex, by 24th May, 1956.

LEEDS REGIONAL HOSPITAL BOARD. Senior Registrar vacancies.

Anæsthetics

Duties initially at the Thoracic Surgical Units of the General Infirmary at Leeds and at Pinderfields General Hospital, Wakefield. The person appointed will be expected, if required, to interchange duties with the Senior Registrar in the Department of Anæsthetics at the General Infirmary.

Chest Diseases

Castle Hill Sanatorium, Cottingham, near Hull (220 medical and 51 thoracic surgical beds). Non-resident.

Child Psychiatry

Duties at the Leeds University Department of Psychiatry and Associated Clinics.

Infectious Diseases

Duties mainly at Seacroft (Infectious Diseases) Hospital, Leeds (200 I.D. Beds with a high average occupancy). The post will be resident and previous experience in infectious diseases is essential.

Orthopædic Surgery

Hull A Group. Duties mainly at Hull Royal Infirmary (47 orthopædic beds). Non-resident.

Pathology

Regional Transfusion Centre, Seacroft, with minor relief duties in General Pathology at St. James's Hospital, Leeds. 52,000 pints of blood taken annually. Previous experience in all branches of pathology desirable. Non-resident.

Radiology

(*a*) Duties at hospitals in Hull A, Hull B and East Riding Groups. Non-resident.

(*b*) Duties at St. James's Hospital, Leeds. Subject to satisfactory service, arrangements will be made for the successful candidate to undertake a period of duty at the General Infirmary at Leeds. Non-resident.

Applications, stating age, qualifications, and details of present and previous appointments with dates, together with the names and addresses of 3 referees, to the Secretary, Joint Registrars Committee, Park-parade, Harrogate, by 24th May, 1956.

LEEDS REGIONAL HOSPITAL BOARD. Registrar vacancies.

Chest Diseases

Scotton Banks Sanatorium, Knaresborough (306 Beds). Resident. Visiting staff includes Teaching Hospital Consultants.

General Medicine

(*a*) Hull A Group (230 general medical beds) and East Riding Group (80 general medical beds). Duties, 6/11 Hull A and 5/11 East Riding. Holder to reside in Beverley.

(*b*) Regional Rheumatism Centre, Harrogate (240 Beds) (9 sessions), and Rheumatism Clinic, General Infirmary at Leeds (2 sessions). Resident at the Royal Bath Hospital, Harrogate.

Obstetrics and Gynæcology

Duties at St. Luke's Hospital, Bradford (118 obstetric and 105 gynæcological beds). Resident.

Orthopædic Surgery

St. James's Hospital, Leeds (64 orthopædic beds), and the Public Dispensary, Leeds. Non-resident.

Pædiatrics

Victoria Hospital for Sick Children, Hull (150 Beds), and other General Hospitals with pædiatric beds in the Hull A and East Riding Hospital Management Committee Groups. Non-resident.

Psychiatry

(*a*) Clifton Hospital, York (1100 Beds). Resident or non-resident.

(*b*) Menston Hospital, near Leeds (2500 Beds).

If desired, facilities for attending at Leeds University will be provided if the successful candidates are studying for D.P.M.

Applications, stating age, qualifications, and details of present and previous appointments with dates, together with the names and addresses of 3 referees, to the Secretary, Joint Registrars Committee, Park-parade, Harrogate, by 17th May, 1956.

LEEDS. THE UNITED LEEDS HOSPITALS. The GENERAL INFIRMARY AT LEEDS. REGISTRAR in General Medicine (cardiological) required from 1st June, 1956, non-resident. Terms and conditions of service for hospital medical staff apply.

Applications, giving details of age, qualifications, previous posts with dates, and 3 names for reference, to be sent to the Sub-Dean, School of Medicine, Leeds, 2, by 14th May, 1956.

LEEDS. THE UNITED LEEDS HOSPITALS. The GENERAL INFIRMARY AT LEEDS. SENIOR HOUSE OFFICER in Neurosurgery required for a period of 6 months from 1st May, 1956. The appointment will be renewable for a further period of 6 months. Terms and conditions of service for hospital medical staff apply.

Applications, giving details of age, qualifications, posts held with dates, and with 3 names for reference, should be sent to the Secretary to the Board as soon as possible.

LEICESTER ROYAL INFIRMARY. Applications are invited for the post of HOUSE SURGEON available for pre-registration candidates vacant 1st July. Recognised for F.R.C.S.

Applications, stating age and qualifications, with copies of recent testimonials, to the Group Secretary, No. 1 Hospital Management Committee, The Leicester Royal Infirmary, by 23rd May, 1956.

LUTON AND DUNSTABLE HOSPITAL. (250 Beds.) NORTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. ANÆSTHETIC REGISTRAR (resident) required at above Hospital and associated units (134 Beds). Post vacant 31st May, 1956. The Hospital may be visited by direct appointment.

Application forms obtainable from, and returnable to Secretary, Luton and Hitchin Group Hospital Management Committee, St. Mary's Hospital, Luton, Beds, by 29th May, 1956.

LIVERPOOL. THE UNITED LIVERPOOL HOSPITALS. Applications are invited for a resident post of SENIOR HOUSE OFFICER in Gynæcology at the Women's Hospital for the period 1st July–30th September, 1956.

Apply by 26th May, 1956, on form obtainable from the Secretary, 80, Rodney-street, Liverpool, 1.

LIVERPOOL RADIUM INSTITUTE, Liverpool, 7. Applications are invited for a resident post in the JUNIOR HOSPITAL MEDICAL OFFICER grade. Salary scale £775–£50–£1075 according to experience. This appointment is particularly valuable to practitioners who contemplate adopting radiotherapy as a special career. On the other hand, it provides an excellent opportunity for studying for a higher qualification either in medicine or in surgery.

Applications, giving particulars of age and experience, together with names and addresses of 2 referees, should reach the Medical Director as soon as possible.

LEAMINGTON SPA. WARNEFORD GENERAL HOSPITAL. (197 Beds.) HOUSE PHYSICIAN (pre-registration post), vacant 7th June, 1956.

Applications, with 2 recent references, to be sent to Hospital Secretary.

LINCOLN. LAWN HOSPITAL, Union-road. (Mental Hospital for Private Patients—100 Beds.) LINCOLN NO. 2 HOSPITAL MANAGEMENT COMMITTEE. JUNIOR HOSPITAL MEDICAL OFFICER (full-time). Salary and conditions of service in accordance with latest recommendations of Whitley Council. A small flat is available.

Apply as early as possible to the Medical Superintendent.

MAIDSTONE. KENT COUNTY OPHTHALMIC AND AURAL HOSPITAL. (113 Beds.) MID-KENT HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the appointment of SENIOR HOUSE SURGEON in the E.N.T. Department of the above Hospital. Post vacant now. There are 55 E.N.T. beds and 6 specialist operating sessions each week. Valuable experience is available, and the post is recognised for the purpose of the F.R.C.S. and the D.L.O. Salary will be £745 a year, less £150 a year for residential emoluments.

Applications immediately to the Administrative Officer, Kent County Ophthalmic and Aural Hospital, Maidstone, Kent.

MAIDSTONE. WEST KENT GENERAL HOSPITAL. (141 Beds.) MID-KENT HOSPITAL MANAGEMENT COMMITTEE. CASUALTY OFFICER (Senior House Officer). Recognised for F.R.C.S. Salary £745 a year, less £150 a year for board and lodging. Post vacant June, 1956.

Applications to the Administrative Officer at the Hospital.

MANCHESTER. BOOTH HALL AND MONSALL HOSPITAL MANAGEMENT COMMITTEE. SENIOR HOUSE OFFICER (pathology) resident, required to assist the Director of Pathology for the Group (Booth Hall Children's Hospital and Monsall Hospital). Salary £745 p.a., less £140 p.a. for residence. Post tenable for 1 year in the first instance.

Applications to be sent as soon as possible to the Group Secretary, Booth Hall Hospital, Manchester, 9.

MANCHESTER REGIONAL HOSPITAL BOARD invites applications for the post of RESIDENT REGISTRAR in General Medicine, vacant 1st August, 1956. The duties will be with the Stockport and Buxton Hospital Management Committee with main duties at Stepping Hill Hospital and Stockport Infirmary.

Applications, stating age, experience and qualifications, together with copies of 2 testimonials, to be forwarded to the Secretary, Stockport and Buxton Hospital Management Committee, 59B, Shaw-heath, Stockport.

MANCHESTER. SOUTH MANCHESTER HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of SENIOR HOUSE OFFICER (anæsthetics) with duties in the South Manchester Group. This post is recognised by the Royal College of Surgeons for the F.F.A.R.C.S. and for the D.A.

Applications, stating age, qualifications, present post, experience, and names of 2 referees, to be forwarded immediately to the Group Secretary, Withington Hospital, Manchester, 20.

MANCHESTER, 19. THE DUCHESS OF YORK HOSPITAL FOR BABIES. SOUTH MANCHESTER HOSPITAL MANAGEMENT COMMITTEE. There will be a vacancy at the above Hospital, which is associated with the Manchester University for teaching purposes, for a HOUSE OFFICER (Male or Female) pre- or post-registration, for 6 months commencing 1st July, 1956.

Applications, with copies of 3 testimonials, to be sent to the Administrative Officer of the Hospital, as soon as possible.

MANCHESTER. UNITED MANCHESTER HOSPITALS. MANCHESTER ROYAL INFIRMARY, MANCHESTER, 13. RESIDENT CASUALTY OFFICER (Registrar or Senior House Officer grade) to commence on 9th August, 1956. Whole-time post for 12 months. Surgical experience essential. Residence £155 p.a.

Application to be made on form obtainable from the undersigned and to be returned not later than 23rd May, 1956.

G. H. TAYLOR, Secretary.

MANCHESTER. UNITED MANCHESTER HOSPITALS. SAINT MARY'S HOSPITALS, MANCHESTER. Applications are invited for the post of OBSTETRICAL HOUSE SURGEON to a Maternity Unit operating temporarily in the Whitworth Park Branch of the above-named Hospital, vacant 1st August, 1956. The post is supernumerary to the establishment recognised for training purposes by the Royal College of Obstetricians and Gynæcologists. Previous obstetrical experience is desirable. An opportunity exists for a limited amount of gynæcological training during tenure of the post. National scale.

Application forms, which may be obtained from the undersigned, to be returned not later than 28th May, 1956.

A. R. WISE, General Superintendent.

Saint Mary's Hospitals, Whitworth Park, Manchester, 13.

MANCHESTER. UNITED MANCHESTER HOSPITALS. SAINT MARY'S HOSPITALS, MANCHESTER. Applications are invited for 3 posts of HOUSE OFFICER in Obstetrics, 2 of which are for provisionally registered medical practitioners. Salary in accordance with national scale. The appointments are for 6 months from 1st August, 1956.

Application forms may be obtained from the undersigned and returned not later than 28th May, 1956.

A. R. WISE, General Superintendent.

Saint Mary's Hospitals, Whitworth Park, Manchester, 13.

MANCHESTER. UNITED MANCHESTER HOSPITALS. SAINT MARY'S HOSPITALS, MANCHESTER. Applications are invited for the post of HOUSE OFFICER in Gynæcology. Applicants must have had previous hospital experience in medicine and surgery. The post is recognised for the purpose of the M.R.C.O.G. examination. The appointment is for 6 months starting 1st July, 1956. Salary in accordance with national scale.

Application forms may be obtained from the undersigned and returned not later than 21st May, 1956.

A. R. WISE, General Superintendent.

Saint Mary's Hospitals, Whitworth Park, Manchester, 13.

MANCHESTER VICTORIA MEMORIAL JEWISH HOSPITAL. (Non-Sectarian—104 Beds.) Applications are invited for the resident post of SENIOR HOUSE OFFICER in Surgery, to act as Deputy Resident Surgical Officer. Vacant 1st June, 1956. Recognised for F.R.C.S.

Applications, with full details and names of 2 referees, by 21st May, 1956, to Group Secretary, North Manchester Hospital Management Committee, Crumpsall Hospital, Manchester, 8.

MAIDENHEAD HOSPITAL, Berkshire. Applications invited from registered practitioners for post of CASUALTY OFFICER, vacant now. Post recognised for F.R.C.S. Salary on House Officer scale plus £50 p.a.

Applications, stating age, qualifications and nationality, with copies of testimonials or names of 3 referees, to Secretary.

MID-KENT HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the appointment of RESIDENT ANÆSTHETIST for joint duties at the West Kent General Hospital, and the Kent County Ophthalmic and Aural Hospital, Maidstone (total beds 254). The post, which is of Senior House Officer grade, will be vacant June, 1956, and carries a salary of £745 a year, less £150 for residential emoluments. Excellent experience under Consultant Anæsthetists is available, and the post is recognised for the F.F.A.R.C.S. examination.

Applications, stating age, nationality, qualifications and experience, together with the names of 2 suitable referees, should be forwarded to the Administrative Officer, West Kent General Hospital, Maidstone.

MORECAMBE. QUEEN VICTORIA HOSPITAL. (100 Beds.) RESIDENT SENIOR HOUSE OFFICER (obstetrics and gynæcology). The post vacant shortly and tenable for 1 year. Successful applicant will work with the Specialist Unit, but will be expected to relieve the Senior House Officer Surgical during absence.

Applications, with full particulars, to Group Secretary, Royal Lancaster Infirmary, Lancaster.

NEWCASTLE UPON TYNE, 6. WALKER GATE HOSPITAL, Benfield-road. (CHEST UNIT.) NEWCASTLE UPON TYNE HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of SENIOR HOUSE OFFICER at the above Hospital. Resident or non-resident post (a 5-roomed house would be available to married applicant). The Officer will be required to carry out duties assigned to him under the supervision of the Senior Chest Physician. Facilities are available for attending the D.P.H. Course at the University of Durham. National Health Service terms and conditions apply.

Applications, with the names and addresses of 2 referees, should be sent to the Hospital Secretary, Walker Gate Hospital, Newcastle upon Tyne, 6.

NEWMARKET GENERAL HOSPITAL, Suffolk. Applications are invited for the post of HOUSE PHYSICIAN, vacant 13th July, 1956. Duties include house charge of general medical and pulmonary tuberculosis beds. The post is recognised for pre-registration, is resident and tenable for 6 months. Salary in accordance with national scale.

Applications, together with 3 recent testimonials, to Medical Superintendent.

NEWMARKET GENERAL HOSPITAL, Suffolk. Senior HOUSE SURGEON (Senior House Officer grade). Tenable for 6 months in first instance. Duties mainly surgical, but a small amount of E.N.T., and ophthalmic surgery is included. Preference to candidates who wish to be trained in surgical technique and to gain experience in operative surgery.

Applications, with copies of 3 testimonials, to Medical Superintendent.

NEWMARKET GENERAL HOSPITAL, Suffolk. Applications invited for the post, now vacant, of SENIOR HOUSE OFFICER for orthopædic and casualty duties.

Applications, with 3 testimonials, to the Medical Superintendent.

NORTHWOOD, MIDDLESEX. MOUNT VERNON HOSPITAL. Applications are invited for the post of HOUSE SURGEON for general surgery and urology, vacant 1st June, 1956. Recognised for the Final F.R.C.S. in General Surgery and recognised as a pre-registration appointment.

Applications, accompanied by 2 testimonials, to be forwarded to the Resident Medical Officer by 18th May, 1956.

NORTHWOOD, MIDDLESEX. MOUNT VERNON HOSPITAL. Applications are invited for the post of HOUSE PHYSICIAN to the Radiotherapy Department, vacant 1st June, 1956. This post is recognised as a pre-registration appointment.

Applications, accompanied by 2 testimonials, to be forwarded to the Resident Medical Officer by 18th May, 1956.

NOTTINGHAM. CITY HOSPITAL. (811 Beds.) Sheffield REGIONAL HOSPITAL BOARD. Whole-time RESIDENT REGISTRAR (thoracic surgery) required. Appointment for 1 year in first instance. Thoracic Unit at City Hospital undertakes non-tuberculous and cardiological cases; tuberculosis surgery undertaken at modern unit in nearby Sanatorium, appointee encouraged to attend. Previous thoracic surgical experience desirable.

Apply to Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, by 21st May, 1956, giving age, nationality, present and previous appointments with dates, naming 3 referees.

NOTTINGHAM. CITY HOSPITAL. (811 Beds.) Applications are invited for the post of RESIDENT ANÆSTHETIST (Senior House Officer), vacant 1st June, 1956. The post is recognised for the D.A. and the F.F.A.R.C.S. and offers wide experience; this is a busy general hospital with Departments in General, Orthopædic, Gynæcological, Thoracic, and Plastic Surgery.

Applications, stating age, nationality and qualifications, together with copies of not more than 3 testimonials, to be sent to the Hospital Secretary, City Hospital, Hucknall-road, Nottingham.

NOTTINGHAM. CITY HOSPITAL. (811 Beds.) Applications are invited for the post of SENIOR HOUSE OFFICER to the Department of Thoracic Surgery. Post vacant 1st June, 1956. Salary £745 p.a., less £150 p.a. for residential emoluments. The appointment will be for 1 year.

Applications, stating age, nationality, qualifications and experience, together with copies of not more than 3 testimonials, to be submitted immediately to the Hospital Secretary, City Hospital, Hucknall-road, Nottingham.

NOTTINGHAM GENERAL HOSPITAL. Resident HOUSE SURGEONS (2) pre-registration (first or second post) required as soon as possible for 6 months.

Applications, stating age, qualifications and experience, together with copies of testimonials, to be sent to the Group Secretary.

NOTTINGHAM GENERAL HOSPITAL. Senior SURGICAL HOUSE OFFICER required at the above Hospital. Good opportunity for obtaining operating experience in general surgery. Recognised for the F.R.C.S. Duties to commence as soon as possible.

Applications, stating age, qualifications, and experience, together with copies of testimonials, to be sent to the Group Secretary, General Hospital, Nottingham.

NOTTINGHAM. HIGHBURY HOSPITAL. Applications are invited from fully registered medical practitioners for the post of SENIOR HOUSE OFFICER in the Obstetrical and Gynæcological Department (41 obstetric beds, 11 gynæcological beds and a small block for puerperal pyrexia). The appointment is for a period of 12 months to commence 1st July. The Hospital is recognised for the M.R.C.O.G. (obstetrics only). Previous obstetric experience required.

Applications, stating age, qualifications, and experience also nationality, together with copies of recent testimonials, to be sent to Group Secretary, General Hospital, Nottingham.

NOTTINGHAM (near). SAXONDALE HOSPITAL, RADCLIFFE-ON-TRENT, near NOTTINGHAM. (930 Beds. Recognised for D.P.M. examination.) SHEFFIELD REGIONAL HOSPITAL BOARD. Whole-time REGISTRAR in Psychiatry required. House available. Appointment for 1 year in first instance.

Apply to Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, by 21st May, 1956, giving age, nationality, qualifications, present and previous appointments with dates, naming 3 referees.

NUNEATON. GEORGE ELIOT HOSPITAL. House SURGEON (pre-registration), resident. Recognised F.R.C.S. No casualty duties.

Applications to Hospital Secretary.

OXFORD REGIONAL HOSPITAL BOARD. Registrar in E.N.T. Surgery to the hospitals of the Aylesbury/High Wycombe area. The post is recognised for the D.L.O. and F.R.C.S. The appointment will be for 1 year and eligible for extension to a second year.

Applications, on forms obtainable from the Secretary, Registrar Committee, 43, Banbury-road, Oxford, should reach him by 28th May, 1956.

OXFORD. UNITED OXFORD HOSPITALS. Department OF PÆDIATRICS. Applications invited for the post of NON-RESIDENT REGISTRAR at the Churchill Hospital, commencing in June. Pædiatrics and neonatal.

Applications, on forms obtainable from the Administrator, Radcliffe Infirmary, Oxford, should be received not later than 22nd May, 1956.

PAISLEY AND DISTRICT HOSPITALS BOARD OF MANAGEMENT. Applications are invited for JUNIOR HOSPITAL MEDICAL OFFICER posts at the following hospitals:—

(*a*) Orthopædic Unit, Royal Alexandra Infirmary, Paisley.
(*b*) Darnley Sanatorium, Nitshill, Glasgow.
(*c*) Johnstone Sanatorium, Johnstone.

Applications, stating age, date of qualification, experience, &c., should be submitted to Group Medical Superintendent, Royal Alexandra Infirmary, Paisley.

POOLE GENERAL HOSPITAL, Longfleet-road, Poole, DORSET. BOURNEMOUTH AND EAST DORSET HOSPITAL MANAGEMENT COMMITTEE. 2 HOUSE SURGEONS (pre-registration) required. 1 post vacant immediately, and second on 20th June, 1956. Posts recognised for F.R.C.S. and F.R.C.S.E.

Applications to the Hospital Secretary at the Hospital.

POOLE GENERAL HOSPITAL, Longfleet-road, Poole, DORSET. BOURNEMOUTH AND EAST DORSET HOSPITAL MANAGEMENT COMMITTEE. RESIDENT or NON-RESIDENT SENIOR HOUSE OFFICER (casualty) required 27th May–10th June, inclusive.

Applications to the Hospital Secretary.

PORTSMOUTH. ST. MARY'S HOSPITAL. Applications are invited for the appointment of SENIOR HOUSE PHYSICIAN at above Hospital. The duties will be mainly in medical wards that form an admission unit for 430 geriatric beds in the Group. A Consultant Physician being in charge of this unit. In addition the successful candidate will have duties in respect of 20 acute medical beds in the Hospital.

Applications, giving age, nationality, qualifications and experience, together with the names and addresses of 2 referees, should be sent to the Group Secretary, Portsmouth Group Hospital Management Committee, 35, Grove-road South, Southsea.

PORTSMOUTH GROUP HOSPITAL MANAGEMENT COMMITTEE.

Queen Alexandra Hospital (87 surgical beds)
HOUSE SURGEON (pre-registration), vacant now.
Queen Alexandra Hospital (78 medical beds)
HOUSE PHYSICIAN (pre-registration), vacant now.
Saint Mary's Hospital (130 surgical beds)
HOUSE SURGEON (pre-registration), vacant now.
Saint Mary's Hospital
SENIOR HOUSE OFFICER (gynæcology) required. The department consists of 50 Beds and offers excellent facilities for training. Recognised for the M.R.C.O.G. Vacant 16th June, 1956.
Royal Portsmouth Hospital (Orthopædic Department —104 Beds)
HOUSE OFFICER (pre-registration), vacant now.
Applications, stating age, experience, and qualifications, together with names of 2 referees, should be forwarded as soon as possible to E. H. HURST.
35, Grove-road South, Southsea.

PETERBOROUGH. THE MEMORIAL HOSPITAL. PETERBOROUGH AND STAMFORD HOSPITAL MANAGEMENT COMMITTEE. SENIOR HOUSE OFFICER (orthopædic). Applications are invited for this position, vacant now. Exceptional experience offered in busy department.
Apply to the Secretary, Memorial Hospital, Peterborough.

PLYMOUTH. SOUTH DEVON AND EAST CORNWALL HOSPITAL.
SENIOR HOUSE OFFICER in Surgery, vacant immediately. Recognised for the F.R.C.S. Greenbank Road Section.
SENIOR HOUSE OFFICER in Casualty, vacant 1st July, 1956. Recognised for the F.R.C.S. The Central Casualty Department, South Devon and East Cornwall Hospital, Freedom Fields, Plymouth.
HOUSE SURGEONS (pre-registration posts), vacancies 12th June and 1st July, 1956. Recognised for the F.R.C.S. Greenbank Road Section.
HOUSE SURGEONS (pre-registration posts), 2 vacancies 1st July, 1956. Recognised for the F.R.C.S. Freedom Fields Section.
Applications, stating age, nationality, qualifications and experience, with names of 3 referees, to be sent to—
ARTHUR R. CASH, Group Secretary, Plymouth,
South Devon and East Cornwall General Hospital Group.
7, Nelson-gardens, Stoke, Plymouth.

PONTYPRIDD (near). EAST GLAMORGAN HOS-PITAL, CHURCH VILLAGE. (316 Beds and large Outpatient Department. Committee's Base Hospital serving population of 174,000. Recognised for M.R.C.O.G., D.Obst.R.C.O.G., F.R.C.S., D.C.H., F.F.A.R.C.S., D.A.) Locum SENIOR HOUSE OFFICER (anæsthetics), for approximately 6 weeks.
Applications, stating age, qualifications and experience, together with copies of 2 recent testimonials, to be sent to the Group Secretary, Pontypridd and Rhondda Hospital Management Committee, Courthouse-street, Pontypridd.

REDHILL COUNTY HOSPITAL, Earlswood Common, REDHILL, SURREY. HOUSE SURGEON (pre-registration). First or second pre-registration post, recognised for F.R.C.S.
Apply immediately to Group Secretary, Redhill Hospital Management Committee, Earlswood Mount, Redhill (Redhill 3581, Extension 20).

ROCHDALE AND DISTRICT HOSPITAL MANAGE-MENT COMMITTEE. HOUSE SURGEON required at Rochdale Infirmary, June. Pre-registration candidates eligible for this post, which is recognised for 6 months F.R.C.S. experience.
Apply at once to Group Secretary, Central Offices, Birch Hill Hospital, Rochdale.

ROCHDALE. BIRCH HILL HOSPITAL. Paediatric SENIOR HOUSE OFFICER (resident), vacant late July. Recognised D.C.H.
Apply to Group Secretary, Central Offices, Birch Hill Hospital, Rochdale, Lancs, at once.

ROCHFORD, ESSEX. GENERAL HOSPITAL. (603 Beds.) Applications are invited from pre-registration candidates for a 6 months appointment of HOUSE SURGEON (recognised for F.R.C.S.) to be followed, subject to satisfactory service, by a 6 months appointment as HOUSE OFFICER (obstetrics) (recognised for D.Obst.R.C.O.G.). Post vacant 14th June, 1956.
Applications, accompanied by 1 testimonial, to reach the undersigned by 26th May, 1956. J. C. FIELD, Secretary.

ROCHFORD, ESSEX. GENERAL HOSPITAL. (603 Beds.) Applications are invited from pre-registration candidates for a 6 months appointment of HOUSE SURGEON (recognised for F.R.C.S.) at the above Hospital. Post vacant 1st June, 1956.
Applications, &c., accompanied by 1 testimonial, to reach the undersigned by 18th May, 1956.
J. C. FIELD, Secretary.

ROMFORD, ESSEX. VICTORIA HOSPITAL. (99 Beds.) Temporary SURGICAL REGISTRAR (Male) required immediately.
Applications should be forwarded to Secretary, Romford Group Hospital Management Committee, Oldchurch Hospital, Romford.

ROMFORD, ESSEX. OLDCHURCH HOSPITAL. (722 Beds.) SENIOR HOUSE OFFICER required in the Department of Ophthalmology from 22nd May, 1956.
Applications should be addressed immediately to the Group Secretary, Romford Group Hospital Management Committee, Oldchurch Hospital, Romford.

RYDE. ROYAL I.W. COUNTY HOSPITAL. Isle of Wight GROUP HOSPITAL MANAGEMENT COMMITTEE. SENIOR HOUSE OFFICER (salary £745) or HOUSE OFFICER for Pre-registration Service (salary £425–£525 according to experience), required as House Surgeon. Post recognised for F.R.C.S.
Applications, with names of 2 referees, to Hospital Secretary not later than 19th May, 1956.

READING COMBINED HOSPITALS. Area Department OF OBSTETRICS AND GYNÆCOLOGY. (100 Beds.) Applications are invited from registered medical practitioners, Male and Female, for the resident appointment of GYNÆCOLOGICAL HOUSE SURGEON at the Royal Berkshire Hospital, vacant 1st June and tenable for 6 months. Post recognised for M.R.C.O.G.
Write, stating age and qualifications with dates, nationality, and present appointment, with a copy of 1 recent testimonial, to Secretary.

READING AREA DEPARTMENT OF MEDICINE. Applications are invited from provisionally registered medical practitioners for resident post of HOUSE PHYSICIAN, vacant 1st June, and tenable for 6 months. Successful candidate will be required to carry out duties at following Reading hospitals: Royal Berkshire (399 Beds), Battle (391 Beds), and Prospect Park (104 Beds).
Write, before 19th May, stating age, qualifications with dates, nationality, present post, with copy of 1 recent testimonial, to Secretary, Royal Berkshire Hospital, Reading.

READING. ROYAL BERKSHIRE HOSPITAL. (399 Beds.) Applications are invited from provisionally registered medical practitioners, Male and Female, for resident post of HOUSE SURGEON, vacant 1st June, and tenable for 6 months.
Write, before 19th May, stating age, qualifications with dates, nationality, present post, with copy of 1 recent testimonial, to Secretary.

SALFORD ROYAL HOSPITAL. (258 Beds.) Salford HOSPITAL MANAGEMENT COMMITTEE. ANÆSTHETIST required (Senior House Officer status) to commence duty in June and to be resident at Salford Royal Hospital, with occasional duties at the Royal Manchester Children's Hospital. In addition to training in anæsthesia for general surgery, both adult and children, special facilities are available for gaining experience in neurosurgical and other surgical specialties. The post is recognised for the F.F.A.R.C.S., and encouragement will be given to the successful candidate to work for this examination.
Applications, stating age, qualifications and experience, together with copies of 3 recent testimonials, to be sent immediately to the Hospital Secretary, Salford Royal Hospital, Chapel-street, Salford, 3, Lancashire.

SALISBURY GENERAL HOSPITAL. Applications are invited for the appointment of SENIOR HOUSE OFFICER to the E.N.T. Department. Post is recognised for D.L.O. and F.R.C.S.
Applications, naming 2 referees, to Group Secretary, Salisbury Group Hospital Management Committee, Odstock Hospital, Salisbury, Wilts.

SALISBURY GROUP HOSPITAL MANAGEMENT COM-MITTEE. SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. Applications are invited for the appointment of DENTAL REGISTRAR to the Plastic and Oral Surgery Centre at Odstock Hospital. Post vacant 21st July, 1956, and is approved for the Dental Fellowship. Candidates may visit the Unit by appointment.
Application forms obtainable from the Group Secretary, Odstock Hospital, Salisbury, and should be returned within 14 days of the appearance of this advertisement.

SCOTLAND. EASTERN REGIONAL HOSPITAL BOARD. Anæsthetics. DUNDEE TEACHING HOSPITALS. Applications are invited for a post as SENIOR REGISTRAR in Anæsthetics at the Dundee Teaching Hospitals—Dundee Royal Infirmary (510 Beds) and Maryfield Hospital (360 Beds), the main general teaching hospitals associated with the University of St. Andrews. Salary and conditions of service in accordance with national agreement.
Forms of application and further particulars from the Secretary to the Board, "Braeknowe," 430, Blackness-road, Dundee, with whom applications must be lodged not later than 19th May, 1956.

SCOTLAND. EASTERN REGIONAL HOSPITAL BOARD. Orthopædics. Applications are invited for the post of SENIOR REGISTRAR in the Regional Orthopædic Service based on Dundee Royal Infirmary (510 Beds—50 fracture and orthopædic) which is a Teaching Hospital and Bridge of Earn Hospital, Perthshire (806 Beds—280 fracture and orthopædic). Higher surgical qualification and previous experience essential.
Further particulars and forms of application from the Secretary to the Board, 430, Blackness-road, Dundee, with whom applications must be lodged not later than 26th May, 1956.

SCOTLAND. EASTERN REGIONAL HOSPITAL BOARD. Pathology. MARYFIELD HOSPITAL, DUNDEE. Applications are invited for the post of ASSISTANT CLINICAL PATHOLOGIST (Registrar) at Maryfield Hospital, Dundee (370 Beds), 1 of the 2 general teaching hospitals in Dundee associated with the University of St. Andrews. Salary and conditions of service in accordance with national agreement.
Forms of application and further particulars from the Secretary to the Board, "Braeknowe," 430, Blackness-road, Dundee, with whom applications must be lodged not later than 26th May, 1956.

SCOTLAND. NORTH-EASTERN REGIONAL HOS-PITAL BOARD. Applications are invited for the post of SENIOR REGISTRAR in Psychiatry—main duties at Kingseat Hospital which comes under the Board of Management for the Aberdeen Mental Hospitals. Candidates should have experience in their specialty and preferably hold an appropriate higher qualification.
Applications, giving 2 names for reference, should be submitted by 15th May, 1956, to the Secretary, 1, Albyn-place, Aberdeen, from whom further particulars may be obtained.

SCOTLAND. SOUTH-EASTERN REGIONAL HOS-PITAL BOARD. Applications are invited for the appointment (resident) of a REGISTRAR in Infectious Diseases at the City Hospital, Edinburgh.
Applications, giving particulars of age, qualifications and previous experience, together with the names of 2 referees, should be submitted to the Secretary, South-Eastern Regional Hospital Board, 11, Drumsheugh-gardens, Edinburgh, 3, by 4th June.

SCOTLAND. SOUTH-EASTERN REGIONAL HOSPITAL BOARD. Applications are invited for the appointment of REGISTRAR in Medicine, for duty in the Gastro-Intestinal Unit, Western General Hospital, Edinburgh, vacant on 1st September, 1956.

Applications, giving particulars of age, qualifications and previous experience, together with the names of 2 referees, should be submitted to the Secretary, South-Eastern Regional Hospital Board, Scotland, 11, Drumsheugh-gardens, Edinburgh, 3, by 11th June, 1956.

SCOTLAND. SOUTH-EASTERN REGIONAL HOSPITAL BOARD. Applications are invited for the appointment of REGISTRAR in Psychiatry. The duties in the first instance will be at Bangour Hospital which is a modern villa type hospital of over 1000 beds, and is grouped with a general hospital of over 600 beds. Facilities for further training and study will be available in association with the University Department of Psychological Medicine. A house will be available.

Applications, giving particulars of age, qualifications and previous experience, together with the names of 2 referees, should be sent to the Secretary, South-Eastern Regional Hospital Board, Scotland, 11, Drumsheugh-gardens, Edinburgh, 3, by 4th June.

SCOTLAND. WESTERN REGIONAL HOSPITAL BOARD. Applications are invited for the following appointments, which will be for 1 year in the first instance :—

SENIOR REGISTRAR in Radiodiagnosis based at the Western Infirmary, Glasgow.

REGISTRAR in Anæsthetics based at the Royal Infirmary, Glasgow.

These appointments are subject to the National Health Service (Scotland) superannuation regulations.

Applications (12 copies), stating date of birth, qualifications, experience, present appointment, and the names of 3 referees, to reach the Secretary, Western Regional Hospital Board, 64, West Regent-street, Glasgow, C.2, by 26th May, 1956.

SCOTLAND. WESTERN REGIONAL HOSPITAL BOARD. Applications are invited for the appointment of SENIOR REGISTRAR in Pathology based at the Western Infirmary, Glasgow, for regional duties in the Western Infirmary Sector, which will be for 1 year in the first instance. This appointment is subject to the National Health Service (Scotland) superannuation regulations.

Applications (12 copies), stating date of birth, qualifications, experience, present appointment, and the names of 3 referees, to reach the Secretary, Western Regional Hospital Board, 64, West Regent-street, Glasgow, C.2, by 2nd June, 1956.

SCUNTHORPE AND DISTRICT WAR MEMORIAL HOSPITAL. (267 Beds. Recognised for the F.R.C.S.) **SHEFFIELD REGIONAL HOSPITAL BOARD.** Whole-time RESIDENT SURGICAL REGISTRAR required. Appointment for 1 year in first instance.

Apply to Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, by 21st May, 1956, giving age, nationality, qualifications, present and previous appointments with dates, naming 3 referees.

SCUNTHORPE. WAR MEMORIAL HOSPITAL. (262 Beds.) Vacancy for RESIDENT HOUSE SURGEON early June—pre-registration post.

Applications, naming 2 referees, to Group Secretary, Scunthorpe Hospital Management Committee.

SHEFFIELD. CITY GENERAL HOSPITAL. (Recognised for F.F.A.R.C.S. examination.) **SHEFFIELD REGIONAL HOSPITAL BOARD.** Whole-time RESIDENT or NON-RESIDENT REGISTRAR (anæsthetics) required at the above Hospital. This is a large general hospital with a Department of Thoracic Surgery, a Regional Cardiological Centre and a Professional Gynæcological Unit. The successful candidate to reside at the Hospital when "on call." Post vacant 1st July, 1956. Appointment for 1 year in first instance.

Apply to Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, by 21st May, 1956, giving age, nationality, qualifications, present and previous appointments with dates, naming 3 referees.

SHEFFIELD. THE UNITED SHEFFIELD HOSPITALS. Applications invited for the following posts :—

(*a*) SENIOR REGISTRAR in Clinical Pathology. Possession of a higher qualification desirable but not essential. The appointment is for 1 year in the first instance and will be reviewed annually. It has been agreed in principle between the Board of Governors of The United Sheffield Hospitals and the Sheffield Regional Hospital Board that the appointment, if extended for the full period will be divided, subject to satisfactory work and progress, between The United Sheffield Hospitals and a hospital in the Region (at present the Derbyshire Royal Infirmary).

Closing date for applications 31st May, 1956.

Royal Infirmary Unit

(*b*) OPHTHALMIC REGISTRAR.

Closing date for applications 16th May, 1956.

(*c*) RESIDENT SENIOR HOUSE OFFICER in Clinical Pathology. Pathological experience not essential, but candidates must have previous clinical experience. The successful candidate will work in turn in the different branches of clinical pathology in the Laboratories of The United Sheffield Hospitals.

Applications to be sent immediately.

Royal Hospital Unit

(*d*) OPHTHALMIC REGISTRAR. Post vacant 1st June. Diploma in Ophthalmology desirable.

Applications to be sent immediately.

(*e*) REGISTRAR to the E.N.T. Department.

Closing date for applications 26th May, 1956.

Applications for the above posts should state age, qualifications and experience, give the names of 3 referees, and be sent to the Chief Administrative Officer, The United Sheffield Hospitals, West-street, Sheffield, 1, except in the case of post (*c*) where applications should be addressed to The Superintendent, Royal Infirmary, Sheffield, 6.

SHEFFIELD. THE UNITED SHEFFIELD HOSPITALS. CHILDREN'S HOSPITAL UNIT. Applications invited for the non-resident post of CASUALTY OFFICER (Senior House Officer grade) at the above Hospital. Vacant 1st July, 1956.

Applications, stating age, qualifications and experience, with the names of 2 referees, to be sent not later than 22nd May, 1956, to The Superintendent, Children's Hospital, Western Bank, Sheffield, 10.

SHEFFIELD NATIONAL CENTRE FOR RADIOTHERAPY. SHEFFIELD REGIONAL HOSPITAL BOARD. Whole-time NON-RESIDENT SENIOR HOUSE OFFICER or REGISTRAR in Radiotherapy required. (Possession of D.M.R.(T) Part I necessary to qualify for appointment as Registrar.) Appointment for 1 year in first instance.

Apply to Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, by 21st May, 1956, giving age, nationality, qualifications, present and previous appointments with dates, naming 3 referees.

SHEFFIELD. WHARNCLIFFE HOSPITAL. (128 Beds.) **SHEFFIELD REGIONAL HOSPITAL BOARD.** Whole-time SURGICAL REGISTRAR required with additional orthopædic duties. Single accommodation available. Appointment for 1 year in first instance.

Apply to Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, by 21st May, 1956, giving age, nationality, qualifications, present and previous appointments with dates, naming 3 referees.

SHREWSBURY. ROYAL SALOP INFIRMARY. CHILDREN'S UNIT. SENIOR HOUSE OFFICER or HOUSE OFFICER (pædiatric). Appointment for 6 months in the first instance. The Unit consists of medical, surgical and fever beds.

Applications, with copy testimonials, to Group Secretary, Shrewsbury Hospital Group, Royal Salop Infirmary, Shrewsbury.

SHREWSBURY. ROYAL SALOP INFIRMARY. CHILDREN'S UNIT. Locum SENIOR HOUSE OFFICER or HOUSE OFFICER (pædiatric) for the month of June. The Unit consists of medical, surgical, and fever beds.

Apply, in writing, giving full details, to Group Secretary, Shrewsbury Hospital Group, Royal Salop Infirmary, Shrewsbury.

SHREWSBURY. ROYAL SALOP INFIRMARY AND COPTHORNE HOSPITAL. (500 Beds.) RESIDENT ANÆSTHETIST (Senior House Officer). Post recognised for F.F.A.R.C.S. Registrar also employed. Vacant 1st June, 1956.

Applications and copy testimonials to Group Secretary, Shrewsbury Hospital Group, Royal Salop Infirmary, Shrewsbury.

SULLY HOSPITAL, Sully, Glamorganshire. (Thoracic Centre—324 Beds.) SENIOR HOUSE OFFICER (medical) required to commence as soon as possible. Experience available in investigation and treatment of all lung and heart diseases in adults and children.

Form of application from Group Secretary, Cardiff Hospital Management Committee, 44, Cathedral-road, Cardiff.

SUNDERLAND AREA HOSPITAL MANAGEMENT COMMITTEE. RESIDENT ANÆSTHETIST is required for duties at hospitals in the above Group. Senior House Officer grade. Post vacant September. The post offers good practical experience under the supervision of the Visiting Anæsthetists. The hospitals are recognised for the F.F.A.R.C.S. and the D.A. In addition every opportunity is given to attend lectures at the neighbouring University 12 miles away.

Apply to the Group Secretary, Sunderland Area Hospital Management Committee, General Hospital, Sunderland, naming 2 referees.

SOUTHPORT GENERAL INFIRMARY. (Recognised for F.R.C.S. and pre-registration.) HOUSE SURGEON (general surgery and gynæcology). Post vacant about mid-June.

Apply, with 2 copy testimonials, to Group Secretary, Southport and District Hospital Management Committee, Promenade Hospital, Southport.

SOUTHAMPTON. ROYAL SOUTH HANTS HOSPITAL (278 Beds. Recognised for F.R.C.S.) RESIDENT HOUSE SURGEONS required beginning of June. Pre-registration candidates eligible.

Applications, with copies of recent testimonials should be forwarded to Group Secretary, Southampton Group Hospital Management Committee, Bullar-street, Southampton.

SOUTHAMPTON. ROYAL SOUTH HANTS HOSPITAL. SOUTHAMPTON GROUP HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of Locum SENIOR SURGICAL REGISTRAR at the above Hospital for a period of 6 weeks from beginning of June.

Applications, giving details of experience and enclosing names of 2 referees, should be addressed to the Group Secretary, Southampton Group Hospital Management Committee, Bullar-street, Southampton.

SOUTHAMPTON GENERAL HOSPITAL. (471 Beds. Recognised for F.R.C.S.) RESIDENT HOUSE SURGEONS required beginning of June. Pre-registration candidates eligible.

Applications, with copies of recent testimonials, should be forwarded to Group Secretary, Southampton Group Hospital Management Committee, Bullar-street, Southampton.

SOUTHAMPTON GENERAL HOSPITAL. (471 Beds.) RESIDENT HOUSE PHYSICIAN required mid-June. Pre-registration candidates eligible.

Applications, with copies of testimonials, should be forwarded as soon as possible to the Group Secretary, Southampton Group Hospital Management Committee, Bullar-street, Southampton.

SOUTHAMPTON GROUP HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for 2 posts of SENIOR HOUSE OFFICER (anæsthetics) for the Anæsthetic Department of the Southampton Group of hospitals. Special facilities for working for F.F.A.R.C.S. and D.A.

Applications, with copies of testimonials, should be forwarded as soon as possible to the Group Secretary, Southampton Group Hospital Management Committee, Bullar-street, Southampton.

SOUTHAMPTON GROUP HOSPITAL MANAGEMENT COMMITTEE. SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. Applications are invited for the post of Whole-time ANÆSTHETIC REGISTRAR to the Southampton Group of hospitals for work in the General and Special Units. Special facilities for working for Primary or Final F.F.A.R.C.S. This is a new appointment and vacant immediately.

Forms of application may be obtained from the undersigned to whom they should be returned not later than 23rd May, 1956.

FRANK JENNINGS, Group Secretary,
Southampton Group Hospital Management Committee.
Bullar-street, Southampton.

SOUTHEND GENERAL HOSPITAL. Applications are invited for appointment as HOUSE PHYSICIAN (pre-registration). Post vacant 5th June, 1956. Salary according to previous appointments held, less the prescribed charge for residential emoluments.

Applications, stating age, qualifications and previous experience, with copies of recent testimonials (1 testimonial sufficient from applicants for first appointment) to reach the undersigned by 17th May, 1956. J. C. FIELD, Secretary.

SWINDON HOSPITAL GROUP. (537 Beds.) Applications invited for the appointment, now vacant, of RESIDENT SENIOR HOUSE OFFICER as Casualty Officer and Orthopædic House Surgeon at Great Western Hospital, Swindon. Post recognised by R.C.S. for 6 months of years training under Fellowship regulations. Work of Accident and Orthopædic Department, associated with Nuffield Orthopædic Centre (Wingfield Morris Orthopædic Hospital), Oxford, includes large number of industrial injuries. Salary £745 p.a., less £145 p.a. for residential emoluments.

Full details and names of 3 referees to Secretary, 7, Okus-road, Swindon, Wilts, as soon as possible.

SWINDON AND DISTRICT HOSPITAL MANAGEMENT COMMITTEE. SWINDON HOSPITALS. Applications invited for posts of RESIDENT HOUSE SURGEONS for General Surgical Units of 80 Beds at Victoria Hospital. Recognised for F.R.C.S. and training under pre-registration internship regulations, and vacant on 18th June, and 17th July, 1956. Married accommodation available.

Full details, with names of 3 referees, to Secretary, 7 Okus-road, Swindon, by 26th May, 1956.

SWINDON AND DISTRICT HOSPITAL MANAGEMENT COMMITTEE. SWINDON HOSPITALS. Applications invited for posts of RESIDENT HOUSE PHYSICIANS in Acute Medical Unit of 64 Beds at St. Margaret's Hospital. Recognised for training under pre-registration internship regulations and vacant on 3rd June and 5th July, 1956.

Full details, with names of 3 referees, to Secretary, 7, Okus-road, Swindon, by 18th May, 1956.

ST. ALBANS CITY HOSPITAL, St. Albans, Hertfordshire. Locum Tenens GYNÆCOLOGICAL AND OBSTETRIC REGISTRAR (resident) required for duties mainly at the above Hospital from 19th May, pending whole-time appointment.

Applications to Secretary, Mid Herts Group Hospital Management Committee, Bleak House, Catherine-street, St. Albans, as soon as possible.

ST. ALBANS CITY HOSPITAL, St. Albans, Hertfordshire. (384 Beds.) Locum Tenens SURGICAL REGISTRAR (resident) required for 1 of the 2 general surgical teams from approximately 29th May for an indefinite period.

Applications to Secretary, Mid Herts Group Hospital Management Committee, Bleak House, Catherine-street, St. Albans.

ST. ALBANS CITY HOSPITAL, St. Albans, Hertfordshire. (384 Beds.) HOUSE PHYSICIAN (House Officer grade) required to 1 of the 2 medical teams for duties mainly on the acute wards. Post vacant about 24th May, and tenable for 6 months. Preference given to candidates seeking pre-registration posts under the Medical Act, 1950.

Applications to the Secretary, Mid Herts Group Hospital Management Committee, Bleak House, Catherine-street, St. Albans.

ST, ALBANS, HERTFORDSHIRE. NAPSBURY MENTAL HOSPITAL. Applications are invited for the posts of 2 SENIOR HOUSE OFFICERS, appointments to commence immediately. Previous experience as House Physician or House Surgeon essential. Previous psychiatric experience desirable but not essential. Regular clinical case conferences, good psychiatric library and other training facilities. Salary £745 p.a. Residential accommodation is available, if required, for which a charge will be made. No married quarters.

Applications, with references or testimonials, to be sent not later than 22nd May, 1956, to the Medical Superintendent (Telephone : Bowmansgreen 2181).

ST. HELENS AND DISTRICT HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of CASUALTY OFFICER in the Senior House Officer grade, at St. Helens Hospital (196 Beds). The post is approved for the 6 months training in casualty work required of candidates for the Fellowship examination of the Royal College of Surgeons.

Applications, stating age, qualifications, and experience, and giving 2 names for reference, should be forwarded immediately to N. RICHARDS, Group Secretary.
Whiston Hospital, Prescot.

STOKE-ON-TRENT. NORTH STAFFORDSHIRE ROYAL INFIRMARY. HOUSE PHYSICIAN (general medicine and pædiatrics). Pre-registration post.

Detailed applications, with copy testimonials, to Group Secretary, Hospital Management Committee, Princes-road, Stoke-on-Trent, by 28th May.

STOKE-ON-TRENT. NORTH STAFFORDSHIRE ROYAL INFIRMARY. SENIOR HOUSE OFFICER (E.N.T.) required, vacant end May. Recognised F.R.C.S. and D.L.O.

Detailed applications, with copy testimonials, to Group Secretary, Hospital Management Committee, Princes-road, Stoke-on-Trent.

STOKE-ON-TRENT. CITY GENERAL HOSPITAL. HOUSE OFFICER (general surgery), 2 required, 1 vacant now. Pre-registration posts. Hospital recognised for F.R.C.S.

Detailed applications, with copy testimonials, to Group Secretary, Hospital Management Committee, Princes-road, Stoke-on-Trent.

STOCKTON-ON-TEES. STOCKTON AND THORNABY HOSPITAL. (130 Beds.) TEES-SIDE HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the appointment of HOUSE OFFICER (surgical) at the above Hospital. The appointment is recognised for Pre-registration Service under the Medical Act, 1950.

Applications, stating full details, and giving 2 names for reference, to be addressed to the Hospital Secretary.

TAPLOW, near MAIDENHEAD. CANADIAN RED CROSS MEMORIAL HOSPITAL. HOUSE SURGEON required for Unit of Obstetrics and Gynæcology, vacant 11th June. Post recognised for M.R.C.O.G.

Applications, stating age, experience and qualifications with dates, with copies of 2 testimonials, to Secretary.

TAPLOW, near MAIDENHEAD. CANADIAN RED CROSS MEMORIAL HOSPITAL. HOUSE PHYSICIAN required for post vacant 15th June. Preference given to persons seeking pre-registration post.

Applications, stating age, experience, and qualifications with dates, together with copies of 2 testimonials, to Secretary.

TORQUAY. TORBAY HOSPITAL. (166 general beds.) RESIDENT HOUSE OFFICER (surgical) Male or Female, required middle June. Post recognised for F.R.C.S. and pre-registration purposes. There is a complement of 5 Resident House Officers.

Applications, stating qualifications, nationality, and age together with copy testimonials (quoting reference F.955/70), to the Group Secretary, Torquay District Hospital Management Committee, Torbay Hospital, Torquay, S. Devon.

TORQUAY. TORBAY HOSPITAL. Resident Casualty OFFICER (Senior House Officer status), required approximately mid-June. There is a complement of 5 Resident House Officers.

Applications (quoting F.955/71), stating qualifications, nationality, age, with copy testimonials, to the Group Secretary, Torquay District Hospital Management Committee, Torbay Hospital, Torquay.

WARLINGHAM PARK HOSPITAL, Warlingham, Surrey. SENIOR REGISTRAR in Child Psychiatry (whole-time) required to work at The Croydon Child Guidance Clinic, 103, Park-lane, Croydon. Applicants may visit the Clinic by appointment with the Medical Superintendent.

Application forms may be obtained from the Group Secretary, Warlingham Park Hospital Management Committee, Warlingham Park Hospital, Warlingham, Surrey, and should be returned within 14 days from the date of this advertisement.

WARRINGTON INFIRMARY. (172 Beds.) Applications are invited from persons experienced in anæsthetics for the post of RESIDENT ANÆSTHETIST (Male or Female). Graded as Senior House Officer. The Hospital is recognised for the D.A. examination. Salary is £745 p.a., less a deduction of £130 p.a. for residential emoluments.

Applications, stating qualifications and experience, should be sent to— H. L. BOOT, Group Secretary,
Warrington and District Hospital Management Committee.
c/o General Hospital, Warrington, Lancs.

WARWICK (near). KING EDWARD VII MEMORIAL CHEST HOSPITAL, HERTFORD HILL, near WARWICK. (Diseases of the Chest—228 Beds.) SENIOR HOUSE OFFICER (resident). The Hospital is a modern one with a Thoracic Surgical Unit.

Applications, with names and addresses of 3 referees, to Medical Superintendent.

WATFORD AND DISTRICT PEACE MEMORIAL HOSPITAL. NORTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. RADIOLOGICAL REGISTRAR required for the above Hospital, which may be visited by direct appointment. Post vacant immediately.

Application form obtainable from, and returnable to, the Secretary, West Herts Group Hospital Management Committee, 9, Rickmansworth-road, Watford, Herts, by not later than 10 days after the appearance of this advertisement.

WATFORD PEACE MEMORIAL HOSPITAL AND SHRODELLS HOSPITAL, WATFORD. NORTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. SURGICAL REGISTRAR required at above Hospitals which may be visited by direct appointment. Post vacant immediately.

Application form obtainable from, and returnable to, the Secretary, West Herts Group Hospital Management Committee, 9, Rickmansworth-road, Watford, Herts, by not later than 10 days after the appearance of this advertisement.

WELSH REGIONAL HOSPITAL BOARD. Registrar in Thoracic Surgery. Based at Morriston Hospital, Morriston, near Swansea, also expected to serve other hospitals in district. Unit has 60 Beds for all types thoracic surgery, including tuberculous, non-tuberculous, œsophageal and cardiac. Resident/non-resident. Subject to review end of first year.

Application forms from Senior Administrative Medical Officer, Temple of Peace, Cathays Park, Cardiff, within 14 days.

WIGAN AND LEIGH HOSPITAL MANAGEMENT COMMITTEE. REGISTRAR in Psychiatry (resident or non-resident) to assist Consultant Psychiatrist. Main centre—Billinge Hospital. Active Psychiatric Unit. Modern treatment. Over 300 admissions annually. Post recognised for D.P.M. Good training facilities.

Applications, with names of 2 referees, to Secretary, Wigan and Leigh Hospital Management Committee, Knowsley House, Wigan.

WORCESTER ROYAL INFIRMARY. (213 Beds.) House SURGEON (pre-registration or otherwise) required.

Applications to the Secretary.

WINDSOR. KING EDWARD VII HOSPITAL. House PHYSICIAN required (Male or Female) for post vacant 12th July. Preference given to persons seeking a pre-registration post. Applicants required to be members of a Medical Protection Society.

Applications, stating age, qualifications with dates, nationality, and copies of 3 recent testimonials, to Secretary.

WINDSOR. KING EDWARD VII HOSPITAL. House SURGEON (general surgery), required, Male or Female, for post vacant 1st July. Recognised for F.R.C.S. Preference given to persons seeking a pre-registration post. Applicants required to be members of a Medical Protection Society.

Applications, stating age, nationality, qualifications with dates, with copies of recent testimonials, to Secretary.

WREXHAM WAR MEMORIAL HOSPITAL. (230 Beds.) WREXHAM, POWYS AND MAWDDACH HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of JUNIOR HOSPITAL MEDICAL OFFICER (resident or non-resident) for the Casualty Orthopædic Department of the above Hospital. The appointment is recognised for the Diploma of F.R.C.S. (Eng. and Edin.), and is subject to a limited tenure of 2 years, which may be reviewed at the end of that period. Salary £775–£50–£1075 p.a. Whitley Council conditions of service.

Applications, giving details of age, qualifications, and previous experience, together with copies of 2 recent testimonials, should be sent to the Group Secretary, Maelor General Hospital, Wrexham, as soon as possible.

BELFAST. MATER INFIRMORUM HOSPITAL. (General Teaching Hospital.) SENIOR HOUSE OFFICER. Salary at rate of £745 p.a., less a deduction of £150 for residential emoluments.

Apply, with copies of 2 recent testimonials, to the Honorary Secretary, Board of Management, Mater Infirmorum Hospital, Belfast.

NORTHERN IRELAND TUBERCULOSIS AUTHORITY. Applications are invited for several whole-time posts as REGISTRARS in the service of the above-named Authority for the period 1st October, 1956, till 30th September, 1957. Appointments will be made in either of 2 grades—viz., Senior Registrar or Principal Registrar, the analogous grades in Great Britain being Registrar and Senior Registrar.

Applications should be made on a form which may be obtained (with further particulars) from the Secretary, Northern Ireland Tuberculosis Authority, 27, Adelaide-street, Belfast, and which must be returned so as to be received not later than 25th May, 1956.

NORTHERN IRELAND HOSPITALS AUTHORITY. SOUTH TYRONE HOSPITAL, DUNGANNON. Applications are invited for the posts of HOUSE OFFICERS (pre-registration and post-registration) at the South Tyrone Hospital, Dungannon, Co. Tyrone. The salary attaching to the posts will be £425 rising by half-yearly increments to £525. A charge of £125 p.a. will be made for accommodation and services provided.

Applications, stating age, qualifications and experience, and the names of 2 persons to whom application may be made for a confidential report, should be sent immediately to the Secretary, South Tyrone Hospital Management Committee, Dungannon, Co. Tyrone, N. Ireland.

CHANNEL ISLANDS, JERSEY. GENERAL HOSPITAL. Applications are invited for the post of RESIDENT SURGICAL OFFICER at the above Hospital. Previous experience is essential. The Hospital has 200 Beds and is recognised as a training hospital for the F.R.C.S. Post is vacant on 16th June, 1956. The appointment is for 6 months in the first instance, but is renewable for a further 6 months. Salary £850 p.a., less £125 for residential emoluments.

Applications to be submitted not later than 17th May, 1956, to the President, Public Health Committee, General Hospital, Jersey, C.I.

CANADA. OTTAWA GENERAL HOSPITAL, Ottawa, ONTARIO. RESIDENCIES vacant—Psychiatry. Active treatment department of 600-beds general hospital. Organised training approved by Royal College. $1800 p.a. and full maintenance.

Apply to Sister Superior.

CANADA. VICTORIA HOSPITAL, London, Ontario, CANADA. JUNIOR ROTATING INTERNSHIPS offered to graduates of British Isles Medical Schools in 800-Bed General Hospital associated with Medical School. Stipend $100 per month, plus room, board and laundry, beginning 15th June, for 12 months, or later by arrangement.

Apply, with letter from Dean, to Superintendent.

U.S.A. ST. ELIZABETH HOSPITAL, Covington, KENTUCKY. (400-Bed Hospital.) Required, INTERNES. Internship approved by American Medical Association. Rotate through services in Surgery, Medicine, Pediatrics, Obstetrics, and Emergency Room. Starts 1st July, 1956, and ends 30th June, 1957. Salary $200 per month with maintenance.

Contact above Hospital.

Public Appointments

BIRMINGHAM. CITY OF BIRMINGHAM. Public HEALTH DEPARTMENT. Whole-time ASSISTANT MEDICAL OFFICER (Male or Female) for maternity and child welfare. Applicants should have had experience in work with mothers and children, including a 6 months resident post in a maternity hospital and in a children's hospital. The D.P.H. will be considered an additional qualification. The duties will be mainly in connection with maternity and child welfare as well as the medical aspects of the care of deprived children. Salary £975–£50–£1375 p.a. according to qualifications and experience. Pension scheme (including Widows and Orphans); medical examination.

Form obtainable from Medical Officer of Health, Council House, Birmingham, 3. Applications with 3 recent testimonials to be returned by 20th May, 1956.

BARBADOS GOVERNMENT. Barbados General HosPITAL. MEDICAL REGISTRAR required. Candidates must possess qualifications registrable in the United Kingdom, hold either a postgraduate qualification or have not less than 4 years experience in a hospital ward, outpatient clinic, or special department. Duties are: Physician Specialist wards and rounds (covering holidays), post mortems, medical outpatients (new cases), blood organisation, second string night emergencies, 1 Sunday a month Casualty Officer. Other departmental duties as directed. Appointment on agreement for 3 years; or on 1 year agreement, for bachelors only, renewable —with return passage for officer only. Salary $5280–$6240 (£1100–£1300) a year starting salary depending upon candidate's age and experience, plus temporary cost-of-living allowance of $156 (£32 10s.) a year. Free furnished quarters. Free passages to Barbados for Officer, wife, and children on first appointment and back to United Kingdom on satisfactory completion of agreement, subject to total maximum cost of $1440 (£300) each way. Income-tax at local rates. Social and recreational amenities are good. Climate is healthy. Educational facilities are available.

Application forms from Director of Recruitment, Colonial Office, Sanctuary Buildings, Great Smith-street, London, S.W.1 (quoting reference No. BCD. 117/28/015).

BRITISH RAILWAYS. Eastern Region. Applications are invited from registered medical practitioners, preferably under 40 years of age, for appointment as an ASSISTANT MEDICAL OFFICER in the Eastern Region, British Railways. Candidates should have a good clinical background and an interest in Industrial Medicine. Experience in general practice is desirable. Salary on appointment £1325 p.a., and membership of the Superannuation Fund, subject to medical examination, obligatory. The successful applicant is likely to be located at Doncaster and will be required to travel throughout the Region for relief purposes.

Applications, giving full particulars of age, qualifications and experience, and 2 references, should be sent to the Regional Medical Officer, Eastern Region, General Offices, Marylebone Station, N.W.1, not later than 19th May, 1956.

DUBLIN. LOCAL APPOINTMENTS COMMISSION. Medical position vacant. OBSTETRICIAN-GYNÆCOLOGIST, Galway County Council. Essential qualifications include: (i) at least 7 years experience at least 4 of which were devoted mainly to obstetrics and gynæcology; (ii) M.A.O., M.R.C.O.G., M.R.C.P.I. in Obstetrics and Gynæcology, or equivalent. Salary £1775 with permission to engage in private practice. The person appointed will be allowed the use of certain beds and may undertake, if offered, a University teaching appointment.

Application forms and particulars from the Secretary of the Commission, 45, Upper O'Connell-street, Dublin. Latest time for receiving completed application forms 5 P.M. on 25th May, 1956.

EDINBURGH. CITY OF EDINBURGH. Public Health DEPARTMENT. ASSISTANT MEDICAL OFFICER required. Salary scale £975–£1375.

Apply, giving particulars of experience, qualifications, age, &c., to Medical Officer of Health, Johnston-terrace, Edinburgh, within 14 days of the date of this advertisement.

LINDSEY COUNTY COUNCIL. Health Department. Applications are invited from fully qualified medical Women for post of ASSISTANT MEDICAL OFFICER for Maternity and Child Welfare for Horncastle, Louth and Skegness area of Lindsey. Salary in accordance with award of industrial court regarding salaries of Assistant Medical Officers—i.e., £975 p.a., rising by annual increments of £50 to maximum of £1375 p.a.

Further particulars and forms of application obtainable from undersigned. C. D. CORMAC, County Medical Officer.

P.O. Box No. 26, County Offices, Lincoln, 3rd May, 1956.

STATE PUBLIC SERVICE
QUEENSLAND, AUSTRALIA

MEDICAL OFFICER, Tuberculosis Service

Applications are invited from qualified Medical Practitioners for appointment as Medical Officer, Chest Clinic, Department of Health and Home Affairs, Townsville, with salary range minimum £A2685 10s. p.a., maximum £A2935 10s. p.a., inclusive of present basic wage adjustments and subject to any further such adjustments. Salary in excess of the minimum may be paid according to the qualifications and experience of the appointee. An extra cost-of-living allowance of £25 p.a. is also payable.

Applicants must be registrable as medical practitioners in Queensland. Those possessing higher qualifications will receive preference, but experience in diseases of the chest is essential for appointment.

The appointee will act as Consultant in diseases of the chest to the Townsville Hospitals Board and will be responsible for investigation and treatment of cases of tuberculosis at the Townsville General Hospital. The appointee will also be responsible for the public health control of tuberculosis in his area, including contact investigation, Mantoux Surveys, and the use of B.C.G. Vaccine.

Further particulars may be obtained from the Agent-General for Queensland, 409 and 410, Strand, London, W.C.2.

Applications should contain particulars of full name, date and place of birth, marital status, children (if any), and any war service, and full details of qualifications and experience and should be accompanied by references or certified copies of references.

Applications should be forwarded by air-mail so as to reach the Secretary, Public Service Commissioner's Department, Box 488H, G.P.O., Brisbane, Australia, by 31st July, 1956.

DURHAM COUNTY COUNCIL. Health Department. ASSISTANT MATERNITY AND CHILD WELFARE MEDICAL OFFICER. Applications are invited from registered medical practitioners (Female). Commencing salary £975 p.a., rising by annual increments of £50 to £1375 p.a. Travelling expenses will be paid in accordance with Whitley Council scale.

The appointment is subject to certain conditions, particulars of which may be obtained from the County Medical Officer of Health, Shire Hall, Durham, to whom applications, together with the names of not more than 3 referees, should be sent not later than 21st May, 1956.

J. K. HOPE, Clerk of the County Council.

DURHAM COUNTY COUNCIL. Applications invited from registered medical practitioners (Men and Women) for appointment as SCHOOL MEDICAL OFFICER. Applicants must have had at least 3 years experience in the practice of their profession. Salary scale £975–£50–£1375 p.a.

For further details and form of application apply to undersigned. Completed applications by 2nd June, 1956.

G. H. METCALFE, Director of Education.

Shire Hall, Durham, 30th April, 1956.

NIGERIAN RAILWAY CORPORATION. Applications are invited from persons possessing the specified qualifications for appointment to the position of PRINCIPAL MEDICAL AND HEALTH OFFICER on contract terms.

Duties: Inauguration, development, and control of a Railway Medical Service to care for over 500 senior staff and some 30,000 junior staff. The successful applicant will be required to plan the establishment of, and to control, hospitals to be constructed for the purpose.

Qualifications: F.R.C.S. or M.R.C.P., D.P.H. D.T.M. & H. in addition would be an advantage; legally qualified medical practitioner entitled to practise in Great Britain; extensive medical experience (both practical and administrative). Some administrative experience in Nigeria is desirable but not essential.

Salary: According to qualifications and experience, but not less than £2000 p.a., plus overseas pay (if applicable), and gratuity of 20% of total emoluments.

Applications, which must be in writing, are required to reach the London Representative, Nigerian Railway Corporation, 11, Manchester-square, London, W.1, not later than 28th May, 1956, and should specify applicant's age, full details of experience, and qualifications with dates, and the names of 3 referees to whom reference may be made.

NORFOLK. COUNTY OF NORFOLK. The Norfolk County Council and the County District Councils concerned invite applications from registered medical practitioners holding the Diploma in Public Health for the whole-time appointment of ASSISTANT COUNTY MEDICAL OFFICER AND DISTRICT MEDICAL OFFICER OF HEALTH for the undermentioned area:—

Area No. 8.—Docking Rural District; Walsingham Rural District; Wells-next-the-Sea Urban District; Hunstanton Urban District (as A.C.M.O. only). Total population approximately 48,000.

The person appointed will be employed for seven-elevenths of his time as Assistant County Medical Officer and four-elevenths as District Medical Officer of Health. He will act as an Assistant County Medical Officer under the direction of the County Medical Officer, and as District Medical Officer of Health he will be subject to the instructions of the District Councils concerned. The combined salary scale will be £1536, rising to a maximum of £1794 p.a. Travelling and subsistence expenses will be paid in accordance with the County Council's scales.

Application forms, together with further particulars of the appointment, can be obtained from the County Medical Officer, 29, Thorpe-road, Norwich, to whom completed application forms should be returned not later than 31st May.

NORTHAMPTONSHIRE COUNTY COUNCIL. Applications are invited for the whole-time appointment of ASSISTANT MEDICAL OFFICER for maternity and child welfare and school medical inspection, on the salary scale of £975–£50–£1375 p.a., subject to the increase recently agreed by the Medical Whitley Council. Travelling and subsistence allowance will be paid on the scale from time to time approved by the Council. Preference will be given to candidates who have special experience in maternity and child welfare work or who hold the Diploma in Child Health. The Officer appointed will work under the direction of the County Medical Officer of Health and will have to reside in or near Kettering. The appointment will be subject to the Local Government Superannuation Acts and will be determinable by 3 months notice on either side.

Applications, stating age, qualifications and experience, with the names of 2 referees, should reach the undersigned not later than 19th May, 1956.

J. ALAN TURNER, Clerk of the County Council.

County Hall, Northampton.

THE MEDICAL SERVICE OF THE ROYAL NAVY

VACANCIES FOR MEDICAL OFFICERS

Candidates are invited for Short Service Commissions of 3 years, on termination of which a gratuity of £450 (tax free) is payable. (Longer Short Service Commissions can be obtained, as an alternative of 4 years duration with gratuity of £600 (tax free).) Ample opportunity is granted for transfer to Permanent Commissions on completion of 1 year's total service. Officers so transferred are paid instead a grant of £1500 (taxable).

All entrants are required to be British subjects whose parents are British subjects, to be medically fit, and to pass an interview.

Full particulars from the Admiralty Medical Department, Queen Anne's Mansions, St. James's Park, London, S.W.1.

General Practice

For an Executive Council post (England and Wales) apply on form E.C.16A obtainable from the council. Mark envelope "Vacancy."

COUNTY BOROUGH OF HUDDERSFIELD. Applications invited for VACANCY (urban). List at present approximately 3000. Residence and surgery available. Apply on Form E.C.16A to the undersigned before 23rd May, 1956. H. HOLLAND.

Huddersfield Executive Council, 49, New North-road, Huddersfield.

EXECUTIVE COUNCIL FOR THE COUNTY BOROUGH OF MERTHYR TYDFIL. Applications are invited from medical practitioners wishing to undertake General Medical Services in the Merthyr Vale, Aberfan and Troedyrhiw District, of the County Borough of Merthyr Tydfil. The Practice vacant is single-handed and at present comprises approximately 1760 patients. The successful applicant will be required to obtain suitable surgery accommodation in the area.

Applications on Form E.C.16A (obtainable from the address given below) should be sent to the undersigned and should be received not later than 11th June, 1956.

I. PRITCHARD,
Clerk of the Merthyr Tydfil Executive Council.
"Glasdir," 24, Victoria-street, Merthyr Tydfil.

Hospital Services: Non-Medical Appointments

SCOTLAND. NORTHERN REGIONAL HOSPITAL BOARD. Applications are invited from Science Graduates for a post of NON-MEDICAL BIOCHEMIST in the Board's Laboratory Service. The main duties are at Craig Dunain Hospital, Inverness, with opportunity for biochemical investigations into mental illness. The post is in the basic grade. Salary scales range from £475 to £845 p.a., according to qualifications and experience.

Further particulars and application forms are obtainable from the undersigned, with whom applications should be lodged by 28th May, 1956. A. M. FRASER, M.D.,
Secretary and Administrative Medical Officer.
Office of the Northern Regional Hospital Board,
Raigmore, Inverness.

Appointment: Too Late for Classification

BRISTOL (near). HAM GREEN HOSPITAL, Pill, BRISTOL. Applications are invited for the post of RESIDENT ASSISTANT PHYSICIAN in the Infectious Diseases Department (350 Beds) of this Hospital. The Hospital contains a major Poliomyelitis Unit, a tuberculous meningitis treatment centre, and offers wide experience in acute medicine. Salary and conditions on Junior Hospital Medical Officer scale. House available.

Applications, stating age, qualifications, &c., to the Group Secretary, Ham Green Hospital, Pill, near Bristol.

Miscellaneous

Medical Officer required by British Mining Company operating in Burma. Salary and allowances £175 per month with 2½ months paid leave at end of each 18 months service. Company provides furnished accommodation, domestic help and accident insurance, also pays passages for wife and 2 children. Similar previous experience and some knowledge of eastern languages desirable.—Write, stating age, qualifications and experience, to Box TL.206, c/o 191, Gresham House, E.C.2.

City (London), small Private Practice, chiefly life insurance.—Address, No. 220, THE LANCET Office, 7, Adam-street, Adelphi, London, W.C.2.

Secretary, well-educated, medical experience, seeks post with Consultant, London.—Address, No. 221, THE LANCET Office, 7, Adam-street, Adelphi, London, W.C.2.

Lady desirous of position as Receptionist to Doctor or Specialist—having 6 years experience in Hospital. Knowledge of typing.—Mrs. SIMMONDS, 44, Brockwell Park-gardens, S.E.24 (TUL 2359).

Sussex Coast, near sea and shops Established Nursing-home (about 20 patients) in quiet secluded gardens about 2 acres; public rooms; central heating; staff quarters; lodge, garage and stabling. For sale freehold as a going concern.—Further details from: HAMPTON & SONS LTD., 6, Arlington-street, St. James's, S.W.1 (HYD: 8222).

"Pregnancy Diagnosis by the Xenopus Method," 24-hour service. Send specimen of urine and £1 1s. fee. Hæmatology, Biochemistry, Flame Photometry.—WELBECK BIOLOGICAL LABORATORIES, 26, Park-crescent, Portland-place, W.1 (MUSeum 5386–7).

Applicants for posts requiring testimonials copied or duplicated should communicate with MANTON SECRETARIAL SERVICE LTD., 98, Victoria-street, S.W.1 (Phone: VICtoria 0141), who are specialists in this kind of work.

Typewriting and Duplicating. First-class work at moder-ate prices by experienced medical typists. Electric machines.—SYBIL RANG, 21, Heath-street, Hampstead, London, N.W.3 (HAM 5329/0504).

New Austin Cars from £270 13s. 6d. down, 24 payments £13 4s. 4d.—SAUNDERS, Austin House, 140, Golders Green-road, Golders Green, London, N.W.11.

Live Leeches always in stock.—Apply: R. Brooks & Co., Lucullus House, 4, Barbican, London, E.C.1.

Microscopes. Highest prices paid for good modern types. Send or bring your equipment for valuation.—WALLACE HEATON LTD., 127, New Bond-street, W.1.

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